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≡ The Oxford Handbook *of*
HYPNOSIS
Theory, Research, and Practice

The Oxford Handbook of
Hypnosis

Theory, Research and
Practice

The Oxford Handbooks series is a major initiative in academic publishing. Each volume offers an authoritative and state-of-the-art survey of current thinking and research in a particular subject area. Specially commissioned essays from leading international figures in the discipline give critical examinations of the progress and direction of debates. Oxford Handbooks provide scholars and graduate students with compelling new perspectives upon a wide range of subjects in psychology.

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The Oxford Handbook of **Hypnosis**

Theory, Research and Practice

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CHAPTER 1

Introduction: a roadmap for explanation, a working definition

Amanda J. Barnier and Michael R. Nash

1.1. Introduction

As an area of scientific inquiry and clinical practice, hypnosis dates back over 220 years. Although interest in hypnosis has waxed and waned over two centuries, today, in the first decade of the twenty-first century, it remains strong. People are as fascinated as ever by hypnosis and by the experiences of the hypnotized person. In a recent survey of cultural views and attitudes about hypnosis, the responses of 280 college students from Australia, Germany, Iran and the USA revealed strong interest in hypnosis and positive attitudes towards it, but also misapprehensions (Green *et al.*, 2006; see also McConkey, 1986; Wilson *et al.*, 1986; Spanos *et al.*, 1987; Johnson and Hauck, 1999). Common assumptions about hypnosis—that a hypnotized person is like a robot, that hypnosis is like being asleep, that hypnotizable people are weak or gullible, that hypnosis can make a person do things they couldn't or wouldn't ordinarily do, that hypnosis is all just faking—although incorrect, reflect genuinely important and interesting basic questions—about the impact of hypnosis on behavioral control versus monitoring, about hypnosis as an altered state, about the correlates of hypnotizability, about the impact of hypnotic

suggestions and about the best explanation for hypnotic effects. These questions continue to interest and tax the ingenuity of workers in the field (as we will see in the chapters of this book). The aim of scientific hypnosis is to go beyond popular perceptions and misperceptions to reveal the true nature of hypnosis and the value of its applications. As Kihlstrom (1992; see also Chapter 2, this volume) once noted: 'hypnosis has matured as both a fascinating topic for scientific research and an effective technique for clinical application' (p. vii).

This handbook is a review of our triumphs and trials as a field of scientific and clinical endeavor. What do we know, what can we do? What do we still not know, what are we still learning or trying to do? This handbook offers 31 chapters from leading hypnosis theorists, researchers and practitioners from all over the world; their chapters comprehensively cover definitions, theory, research and practice. We offer to our colleagues—'both the seasoned veteran and the newcomer to the field' (Fromm and Nash, 1992, p. ix)—a hands-on tool for working in the field of hypnosis. In this Introduction, we: (1) reflect on the challenges of understanding hypnosis; (2) locate our handbook in a tradition of taking stock; (3) offer

a working definition of hypnosis and highlight important themes in the domain and across our chapters; and (4) sketch the 30 chapters that follow.

1.2. Separating the wheat from the chaff

Efforts to separate the truth from the hype of hypnosis have a long history, almost as long as the field of hypnosis itself. In 1784, the King of France, Louis XVI, established a Commission of Inquiry into Animal Magnetism (the forerunner of hypnosis). Known as the ‘Benjamin Franklin Commission’, because it was presided over by Benjamin Franklin, then American Commissioner to France, its aim was to differentiate ‘the instantaneous effects of the fluid upon the animal frame excluding from these effects all the illusions which might mix with them’ (Tintertow, 1970, p. 93; see also McConkey and Barnier, 1991). Using systematic methods of public observation, self-study, case study and hypothesis testing, the Commissioners sought to identify the true causes of the effects of animal magnetism (McConkey and Barnier, 1991; McConkey and Perry, 2002; Perry and McConkey, 2002; for more references to the Franklin Commission, see Kihlstrom, Chapter 2; McConkey, Chapter 3; Lynn *et al.*, Chapter 5; Spiegel, Chapter 7; Laurence *et al.*, Chapter 9; Tasso and Perez, Chapter 11; Benham and Younger, Chapter 15, this volume). Nearly two centuries later, the influential theorist, researcher and practitioner, Martin Orne, likewise aimed to separate essence from artifact in hypnosis with equally clever methodologies and experiments (including the real–simulating paradigm; Orne, 1959; see also Cox and Bryant, Chapter 12, this volume). In this handbook, these discussions—of what hypnosis is and what it is not, of what hypnosis can do and what it cannot—continue, but as McConkey points out in his chapter, with new generations of questions and answers (McConkey, Chapter 3, this volume).

As noted above, hypnosis has always fascinated people. Laurence *et al.* (Chapter 9, this volume) write about the lure of the highly hypnotizable person. In some ways, the rather

flamboyant and seemingly inexplicable behavior of the hypnotized person, at least given the ‘mere words’ of the hypnotist (White, 1941), has been as demanding as it has been captivating. Hypnosis has been considered not only difficult to study, but not quite scientific. Nearly 50 years ago, Gordon Hammer (1961), the influential Australian hypnosis researcher, argued that although psychologists generally do not need to justify their interest in exploring a particular phenomenon and that any topic is as worthy of attention as any other, the study of hypnosis is often not considered in the same generous spirit. Hammer cited Clark Hull, who once said that those who investigate hypnosis must have ‘the courage to brave the semi-superstitious fears of the general public and the uneasy suspicions of their “orthodox scientific brethren”’ (Hammer, 1961, p. 9).

Despite this need for courage, workers in the field have contributed to a legacy of thoughtful conceptualizing, clever research and confident practice that extends back many decades. In fact, the field of hypnosis has attracted some of the brightest names across many disciplines—both for research and for practice. To use a popular sporting analogy, the field of hypnosis has ‘punched above its weight’. For instance, in 2002, Haggbloom and colleagues published a rank-ordered list of the 100 most eminent psychologists of the twentieth century, based on journal citations, introductory textbook citations and survey responses from members of the American Psychological Society. Fourteen of the 99 reported by Haggbloom *et al.* (2002) conducted research on hypnosis, wrote about hypnosis or directly influenced hypnosis research. These include familiar ‘hypnosis names’ such as Sigmund Freud (3), William James (14), Clark Hull (21) and Ernest Hilgard (29), but also Hans Eysenck (13), Kurt Lewin (18), Ivan Pavlov (24) Ulric Neisser (36; who wrote his classic 1967 book ‘Cognitive Psychology’ while visiting Martin Orne’s lab), Endel Tuving (36), Gordon Bower (42), Stanley Milgram (46; whose classic experiments on obedience inspired Orne’s real–simulating model), Elizabeth Loftus (58), Robert Rosenthal (84) and Wilhelm Wundt (93.5). In other words, over 14 percent of psychologists ranked as the most eminent of the twentieth

century were involved in some fashion with hypnosis.

As McConkey (Chapter 3, this volume) notes, across many generations these and other contributors to the field tackled challenging questions. And hypnosis is challenging because, at its heart, hypnosis is a private experience. Influential theorists such as White (1941), Sutcliffe (1960, 1961) and Shor (1979) all pointed to the hypnotic subject's belief that the effects he or she experiences in response to the hypnotist's suggestions are real (for more recent discussions, see Sheehan and McConkey, 1982; McConkey, 1991; Sheehan, 1991, 1992). Sutcliffe (1961) referred to the hypnotized person as 'deluded'. Perhaps naturally, the principal index of the profound changes wrought by hypnotic suggestion is the person's subjective reports of the quality of their experiences: did it feel involuntary, did it seem real (Weitzenhoffer, 1974; see also Barnier *et al.*, Chapter 6, this volume)?

Although overt behavior is a crucial part of hypnotic measurement, and is enshrined in the field's standardized measures, it can be misleading (for more on hypnotizability measures, see Woody and Barnier, Chapter 10, this volume). For instance, one item in the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer and Hilgard, 1962; the 'gold standard' of hypnotizability measurement; Kihlstrom, Chapter 2, this volume) suggests to the hypnotized person that they will hear a mosquito buzzing around their right hand, landing on their hand and tickling. The subject may well appear to brush the mosquito away and thus pass the behavioral scoring criterion for that item. But did they really hear or feel the mosquito? Did they simply swat because they felt the hypnotist was expecting them to? We can only know by asking the subject. Developers of standardized measures of hypnotizability quickly realized that although predictive, positive behavioral responses to hypnotic suggestions are not necessarily accompanied by or reflective of a matching subjective experience (McConkey *et al.*, 1999). The most important and interesting aspect of hypnosis—the phenomenon to be explained—is the individual's private experience of hypnotic suggestions.

When subjects describe their experiences, we are obliged to accept them at their word.

Given findings that highly hypnotizable individuals are not blatantly lying when they report on their hypnotic responses (Kinnunen *et al.*, 1994), we have good reason to accept their verbal reports as valid evidence. But there remains the possibility that hypnotized individuals' reports are misguided, misattributed or motivated in particular ways (Spanos, 1986; McConkey, 1991; Sheehan, 1992). Whereas Sutcliffe recommended that researchers start by accepting verbal reports as a meaningful guide to the occurrence of a hypnotic experience but check them by other means (e.g. behavior or physiology; for a similar, but more recent view, see Oakley, Chapter 14, this volume), Hilgard (1965) preferred verbal report over physiological measures as the accurate indicator of, for example, pain (Sheehan and Perry, 1976). As the authors of this handbook make clear, especially with their clever approaches to understanding hypnosis, drawing inferences from subjective responses is a challenging, but necessary, fact of life in hypnosis (e.g. Cox and Bryant, Chapter 12, this volume). We'll return to the nature of hypnosis in a moment.

Despite the challenges of theory and inference in this area, or perhaps inspired by them, our colleagues past and present have put hypnosis to good use. As generations of researchers focused on the phenomenon of hypnosis itself (in intrinsic research) or used hypnosis to investigate phenomena outside the domain (in instrumental research; see Reyher, 1962, for the first use of this distinction; see also Barnier *et al.*, Chapter 6; Cox and Bryant, Chapter 12; Oakley, Chapter 14, this volume), generations of clinicians developed and validated hypnotic treatments for a broad spectrum of disorders and issues. In reviewing the evidence for clinical hypnosis, Moore and Tasso (Chapter 29, this volume) conclude 'that much impressive work has been done in evaluating the empirical status of clinical hypnosis; and that more remains to be done' (p. 721). In this handbook, in Chapters 16–31, distinguished and successful colleagues describe clinical hypnotic approaches to pain, anxiety, depression, health-compromising behaviors, medical problems, disorders in childhood, conversion and somatization disorders, and dissociative disorders, as well as the use of hypnosis in forensic settings and in sport. They clearly

distinguish what is useful in hypnosis from what is not—the truth from the hype, the wheat from the chaff.

1.3. A handbook, a roadmap

One aim of this handbook is to capture the discipline of hypnosis at a particular moment in time. From time to time the field has found it valuable to take stock, and this volume sits firmly in a tradition of texts begun by Erika Fromm and Ronald E. Shor in 1972. In their 1972 volume, 'Hypnosis: Research Developments and Perspective', Fromm and Shor aimed to summarize the most important theoretical and empirical developments since the revival of hypnosis research in the mid-1950s, by 'ear-marking the obstacles that have stood in the way of the study of hypnosis as a science, presenting the current state of knowledge concerning hypnosis, and pointing the way toward future study' (Fromm and Shor, 1972, p. vii).

In taking stock, contributing authors: (1) reflected on underlying theoretical issues (Fromm and Shor) and considered hypnosis from historic perspectives (Shor); (2) surveyed seven broad areas (hypnosis and sleep by Evans, hypnosis as a research method by Levitt and Chapman, suggested behavior by T. X. Barber, hypnosis and psychophysiological outcomes by Sarbin and Siagle, hypnotic amnesia by Cooper, hypnosis and creativity by P. Bowers and K. S. Bowers, and hypnosis and imagination by Sheehan); (3) described five lines of individual research (effects of neutral hypnosis by Edmonston, hypnotic programming techniques by Blum, evidence for a developmental-interactive theory of hypnotic susceptibility by J. R. Hilgard, the real-simulating paradigm by Orne, and measuring hypnotic depth by Tart); (4) summarized five areas of individual research within specific areas (humanistic aspects of hypnotic communication by Field, hypnosis and adaptive regression by Gruenewald, Fromm and Oberlander, hypnotic dreams and night dreams by E. R. Hilgard and Nowlis, co-operation and submission by hypnotized subjects by Shevrin, and hypnosis as a means of studying cognitive and behavioral control by Zimbardo, Maslach and Marshall); and (5) looked to future research (Fromm).

As a final and major contribution to the field, Fromm and Shor included a 52 page bibliography. Twenty years after its publication, Kihlstrom (1992) said of this volume that it 'quickly found a place on the bookshelf of everyone interested in hypnosis' (p. vii).

In their second volume in 1979, 'Hypnosis: Developments in Research and New Perspectives', Fromm and Shor aimed to capture the exciting changes in the field in six short years. They noted that 'more than 1,000 scientific publications on hypnosis have appeared since the first edition of this book was published in 1972' (Fromm and Shor, 1979, p. xiii). This updated version included an entirely new section (and three chapters) on theories of hypnosis. Also, 13 of the 20 chapters from the first edition were updated by the authors; half of these extensively, such that, according to Fromm and Shor, they 'essentially amount to new chapters' (p. xiii). Only four chapters remained unchanged, in areas where the authors judged that no real progress had been made since 1972. Overwhelmingly, this second edition reflected a field continuing to develop quickly and productively.

In taking stock in this edition, contributing authors: (1) reflected on underlying theoretical issues (Fromm and Shor) and considered hypnosis from historic perspectives (Shor); (2) introduced or further developed three influential theories (E. R. Hilgard's neodissociation theory, Fromm's ego-psychological theory, and Shor's phenomenological model); (3) surveyed seven broad areas (hypnosis and sleep by Evans, hypnosis as a research method by Levitt and Chapman, suggested behavior by T. X. Barber, hypnosis and psychophysiological outcomes by Sarbin and Siagle, hypnotic amnesia by Cooper, hypnosis and creativity by P. Bowers and K. S. Bowers, and hypnosis and imagination by Sheehan); (4) described five lines of individual research (effects of neutral hypnosis by Edmonston, hypnotic programming techniques by Blum, imaginative involvements in everyday life and hypnosis by J. R. Hilgard, the real-simulating paradigm by Orne, and measuring hypnotic depth by Tart); (5) summarized four areas of individual research within specific areas (humanistic aspects of hypnotic communication by Field, hypnosis and adaptive regression by Gruenewald, Fromm and Oberlander,

co-operation and submission by hypnotized subjects by Shevrin, and hypnosis as a means of studying cognitive and behavioral control by Maslach, Zimbardo and Marshall); and (6) looked to future research (Fromm).

This edition included a 68 page bibliography and 342 new references. Of Fromm and Shor's two volumes, Kihlstrom (1992) wrote: 'It is hard to imagine more essential reading for the scientist or practitioner interested in hypnosis—not just for their constituent chapters, but also for the comprehensive, meticulously verified reference lists found at the back' (p. vii).

In their 1992 volume, 'Contemporary Hypnosis Research', Fromm and one of us, Michael R. Nash, aimed to continue the Fromm and Shor tradition. But this edition was entirely new because, as Fromm and Nash (1992) wrote:

... there have been so many changes and advances in the field of experimental hypnosis since 1979 that a simple update of the Fromm and Shor volume would be quite inadequate. New laboratories, new ideas, and new methodologies have transformed the research landscape as familiar theories are further refined, new ones emerge, and some old ones fade away (p. ix).

The aim of this third edition was again to provide a usable and comprehensive reference text—a survey of contemporary hypnosis theory, research, and methodology. In taking stock of the field more than a decade after the second edition, contributing authors: (1) offered theoretical and historical perspectives on hypnotic responsiveness (Woody, Bowers and Oakman) and on questions addressed in hypnosis research (Dixon and Laurence); (2) presented four current empirically based theories (E. R. Hilgard on dissociation theories, Spanos and Coe on a social-psychological approach, Fromm on an ego-psychological theory, and Nash on hypnosis, psychopathology and psychological regression); and (3) surveyed 11 broad areas (research designs by Barabasz and Barabasz, hypnosis as a research method by Holroyd, the neuropsychophysiology of hypnosis by Crawford and Gruzelier, correlates of hypnotic responsiveness by Kirsch and Council, the hypnotizable subject as creative problem-solving agent by Lynn and Sivec, hypnosis and creativity by Shames and Bowers, the phenomenology of hypnosis by

Sheehan, self-hypnosis by Kahn and Fromm, forensic hypnosis by McConkey, clinical hypnosis research by Brown, and the measurement of hypnotic ability by Perry, Nadon and Button).

Like the Fromm and Shor volumes, Fromm and Nash provided a collected bibliography of over 80 pages as a reliable reference source for professionals and students. Kihlstrom (1992) wrote that 'like its predecessors, this volume stands as a monumental summary of where hypnosis has been, where it stands today, and where it is heading tomorrow' (p. viii).

These three texts served as important markers to the continuing growth and sophistication of the field, especially as reflected in theory and research. Following this tradition, we likewise take stock of the field of hypnosis. But our handbook is not a mere updating of any of the earlier editions. Our aim is far broader than these texts. In this single handbook we include chapters on definition, theory, research and practice. This breadth distinguishes our handbook not only from the Fromm and Shor, and Fromm and Nash texts, but from a number of other texts published in recent years including, for instance, Lynn and Rhue's (1991) 'Theories of Hypnosis', Rhue *et al.*'s (1993) 'Handbook of Clinical Hypnosis', McConkey and Sheehan's (1995) 'Hypnosis, Memory and Behavior in Criminal Investigation', Heap *et al.*'s (2004) 'The Highly Hypnotisable Person' and Jamieson's (2007) 'Hypnosis and Conscious States', to name just a few. Our coverage of theory, research and practice also distinguishes it from classic texts including, for instance, Hilgard's (1965) 'Hypnotic Susceptibility', T. X. Barber's (1969) 'Hypnosis: A Scientific Approach', Sheehan and Perry's (1976), 'Methodologies of Hypnosis', Bowers's (1976), 'Hypnosis for the Seriously Curious', Hilgard's (1977) 'Divided Consciousness: Multiple Controls in Human Thought and Action', and Sheehan and McConkey's (1982) 'Hypnosis and Experience: An Analysis of Phenomena and Experience', again to name just a few. Although all of these texts remain important and useful, they have focused on specific parts of the domain of hypnosis: on only theories or methods or clinical applications, or on only specific dimensions of hypnosis (e.g. hypnotizability, hypnosis and memory, the cognitive neuroscience of hypnosis).

The aim of our handbook is to cover the whole terrain of hypnosis in one integrated text—a complete roadmap to the field of hypnosis at the beginning of the twenty-first century. To give a sense of the scope of this roadmap, first we highlight some central themes that run through the field and through these chapters, and then we sketch briefly the 30 chapters to follow in our handbook.

1.4. A working definition and central themes

Looking across the chapters of this handbook, as well as across the field of hypnosis as a whole, we can identify a number of themes of continuing dialog and debate. The first, and perhaps most important, is that of definition. Some others are: the nature of hypnotic ability, its correlates and context of expression; hypnosis as an altered or identifiable state; the role of method in theory and inference; and the link between definition and practice. Since, in our view, almost everything flows from definition, we take this opportunity to present our views (see also Barnier *et al.*, Chapter 6; Nash, Chapter 8).

1.4.1. Definitions: crafting our words carefully and generously

First, let us quickly come to grips with what a definition is, and what it is not. A definition is a concise description. A definition is the sketch; a description is the chiaroscuro. Definitions and descriptions identify the object of interest and its characteristics. Theories (or explanations) are accounts of the causes of the phenomenon. We require a pragmatic, nontendentious definition of hypnotic phenomena; the scientific process proceeds through a description, and ends in a theoretical analysis, thereby providing complete understanding (Killeen and Nash, 2003). However, it all begins with a definition. A definition can be either underdone or overdone. When underdone, the definitional frame affords maximal freedom, but researchers have little common ground for discourse.

Methodological replication mostly occurs only by coincidence. When overdone, the definitional frame provides a well-articulated common-ground, but researchers are confined to so narrow a focus that replication is practically inevitable, and almost always uninteresting.

So where to start? For guidance, we note Auke Tellegen's (1978/1979) splendidly austere rough sketch of what probably interests most of us about hypnosis: The individual's capacity to:

... represent suggested events and states imaginatively and enactively in such a manner that they are experienced as real (p. 220).

With interestingness in mind then, we must first define what constitutes a hypnotic situation. The trick is to do so without sacrificing too much of the term's ecological vitality and relevance to the human condition *in vivo*. Arguably, there are two elements of a hypnotic situation: 'hypnosis-as-procedure' and 'hypnosis-as-product.' Ironically, only very recently has our field come to grips with the word 'hypnosis' as used in these two ways. What do we mean when we say 'the hypnotized group?' Is it a group of people who have been administered a hypnotic procedure? Or is it a group of people who are in a hypnotic state? The two are clearly not the same. We must define what a hypnotic procedure is concisely, while capturing the domain of interest. We know that hypnosis (the product) is not achieved just because hypnosis (the procedure) has been administered. After all, low hypnotizables, unwilling subjects and simulators of all stripes inhabit our laboratories and consulting rooms. We define the hypnotic situation in part by defining hypnosis-as-procedure. We then apply criteria to determine how confident we are that the result is hypnosis-as-product. Those criteria are usually indices of responsiveness: behavioral, experiential and physiological. Much the same can be said for medical anesthesia. Prior to major abdominal surgery surely it is not enough to know that one will be 'anesthetized' in the procedural sense of receiving a standard cocktail of medications tailored to the needs of the average patient. As patients we want to know more. We want to know (with confidence) that we will be 'anesthetized' in the

product sense of having no awareness during surgery. We trust that our anesthesiologist is as interested in anesthesia-as-product as we are!

1.4.2. Hypnosis-as-procedure

1.4.2.1. What is necessary?

Happily, the recent APA Division 30 (Psychological Hypnosis) definition explicitly described the two necessary components of a hypnotic procedure:

Hypnosis typically involves an introduction to the procedure during which the subject is told that suggestions for imaginative experiences will be presented. The hypnotic induction is an extended initial suggestion for using one's imagination, and may contain further elaborations of the introduction. A hypnotic procedure is used to encourage and evaluate responses to suggestions. When using hypnosis, one person (the subject) is guided by another (the hypnotist) to respond to suggestions for changes in subjective experience, alterations in perception, sensation, emotion, thought or behavior (Green *et al.*, 2005, p. 263).

Hence, a procedure is a *hypnotic* procedure as long as it has these two required (and together sufficient) components:

1. *Introduction*: the person administering the procedure tells the subject that what is to follow involves suggestions for imaginative experiences. This introduction might be as simple as: 'I am going to ask you to imagine some changes in the way you think and feel. Is that OK? Let's see what happens'. This introduction then distinguishes the hypnotic situation from other forms of suggestion, which do not invite this type of participation by the subject (e.g. placebo, illusion, social influence; for a review, see Tasso and Perez, Chapter 11, this volume).
2. *The first suggestion*: the definition stipulates that the first imaginative suggestion is administered and operates as the induction. This is an exceedingly important point. If the committee had merely stated 'and then the hypnotic induction happens' it would be begging the question: so what exactly is a hypnotic induction? The committee elegantly

operationalized the induction as the first suggestion after the introduction.

1.4.2.2. What is not necessary

First, as noted above, the APA definition does not require the recitation of a special stylized induction ritual. Instead, the induction is the first suggestion after the introduction. In our standardized protocols, this first suggestion is typically an extended suggestion that may (or may not) contain further elaborations of the introduction. Table 1.1 lists the first suggestions for nine standardized hypnotic procedures.

In its decision to operationalize the 'induction' as simply the first suggestion, the committee was also following Hull (1933) who noted that the active element in a hypnotic procedure might be the first suggestion itself. For Hull (1933), hypnosis was synonymous with hypersuggestibility, so when he described the active element in the induction that causes hypersuggestibility he noted:

Hypersuggestibility is a kind of spontaneous excess effect resulting from positive response to any direct suggestion, sometimes analogous to transfer of training (p. 393).

Indeed, the 'induction' of the Stanford Hypnotic Arm Levitation Induction and Test (SHALIT; Hilgard *et al.*, 1979) is the one and only suggestion in the 6 min procedure. The text of some first suggestions may mention relaxation more than others, but relaxation is not necessary (Bányai and Hilgard, 1976; Mitchell and Lundy, 1986; Pavia and Stanley, 1988). Some first suggestions may be longer than others, but length of the 'induction' does not appear to matter, with some inductions being less than a minute (Kroger, 1977; Matheson and Grehan, 1979; Hariman, 1980; Wicks, 1982; Page and Handley, 1989; Syrjala and Abrams, 1996). Some first suggestions use indirect wording and some do not, but again this does not matter (Matthews *et al.*, 1985; Lynn *et al.*, 1993). These parameters are of little or no importance. What matters is that all of the 'inductions' used in our research scales include at least one main suggestion (and sometimes more).

Second, the APA definition does not require that the word 'hypnosis' be used as part of the introduction to hypnosis or during the

Table 1.1 The ‘induction’ suggestion and the first test suggestion of common research scales

| Scale | ‘Induction’ suggestion | Next suggestion |
|----------------------------------|------------------------|-----------------------|
| Harvard Group (HGSHS:A) | Eye closure | Arm/hand movement |
| Stanford A (SHSS:A) | Eye closure | Arm/hand movement |
| Stanford B (SHSS:B) | Eye closure | Arm/hand movement |
| Stanford C (SHSS:C) | Eye closure | Arm/hand movement |
| Stanford Profile:I (RSPSHS:I) | Arm/hand movement | Perceptual Alteration |
| Stanford Profile:II (RSPSHS:II) | Arm/hand movement | Perceptual alteration |
| Stanford Arm Levitation (SHALIT) | Arm/hand movement | Arm/hand movement |
| CURSS (Modified) | Perceptual alteration | Arm/hand movement |
| Waterloo Group Scale (WGSHS) | Eye closure | Arm/hand movement |

HGSHS:A, Harvard Group Scale of Hypnotic Susceptibility, Form A (Shor and Orne, 1963); SHSS:A, Stanford Hypnotic Susceptibility Scale, Form A and SHSS:B, Stanford Hypnotic Susceptibility Scale, Form B (Weitzenhoffer and Hilgard, 1959); SHSS:C, Stanford Hypnotic Susceptibility Scale, Form C (Weitzenhoffer and Hilgard, 1962); RSPSHS:I, Revised Stanford Profile Scale of Hypnotic Susceptibility, Form I and RSPSHS:II, Revised Stanford Profile Scale of Hypnotic Susceptibility, Form II (Weitzenhoffer and Hilgard, 1967); SHALIT, Stanford Hypnotic Arm Levitation Induction and Test (Hilgard *et al.*, 1979); CURSS, Carlton University Responsiveness to Suggestion Scale-Modified (Comey and Kirsch, 1999); WGSHS, Waterloo-Stanford Group Scale of Hypnotic Susceptibility (Bowers, 1998).

suggestions. The definition committee noted that whereas some think it essential, others do not.

1.4.2.3. Why defining hypnosis-as-procedure is important

Just as manualization is now standard in psychotherapy research, defining what we mean by ‘hypnosis-as-procedure’ is essential because when we define what a hypnotic procedure is (and is not) we influence, and to some degree constrain, our methodologies. In turn, our methodologies inform our theories (Sheehan and Perry, 1976). This is why the Division 30 definition and others like it (Kihlstrom, Chapter 2; Spiegel, Chapter 7, this volume; Tellegen, 1978/1979) are so foundational to a discipline that wishes to remain relevant.

A line of research dating back before the Division 30 definition illustrates the problem of an overly constrictive definition. In a series of papers, Kirsch and Braffman (Braffman and Kirsch, 1999; Kirsch and Braffman, 1999) made minimal changes to a standard hypnotic procedure (Carlton University Responsiveness to Suggestion Scale-Modified; CURSS; Comey and Kirsch, 1999) and declared the resulting procedure to be nonhypnotic. Figure 1.1 details the alterations. Condition #1 is the CURSS

procedure unchanged. For condition #2, the authors retained the introduction of the CURSS hypnotic procedure, changing only the single instance of the word ‘hypnosis’ to the word ‘imagination,’ (as per Figure 1.1); and they deleted the protocol’s first suggestion (skipping directly from the Introduction to the second suggestion). For them, condition #2 was nonhypnotic because it did not use the word ‘hypnosis’ and it skipped the first suggestion (or as they termed it ‘the induction’). The authors reasoned that the difference in how subjects responded in condition #1 and how they responded in condition #2 is *de facto* the effect of hypnosis. They claimed that the determinants of hypnotic suggestibility have been found, and they are nonhypnotic suggestibility (i.e. condition #2) and social factors (see also Lynn *et al.*, Chapter 6, this volume).

However, both of these conditions adhere fully to the two necessary (and together sufficient) components of a hypnotic procedure as stipulated by the APA Division 30 definition. First, both conditions have an introduction that informs the subject that changes in experience will be described and that subjects are ‘to be receptive and responsive to ideas and to allow these ideas to act upon you without interference’. Second, both conditions have a first

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“In this part of the study, we want to assess your ability to use ‘HYPNOSIS’ OR ‘IMAGINATION’ to experience various things that will be described to you on audiotape. Your ability to experience them depends largely on your willingness to be receptive and responsive to ideas and to allow these ideas to act upon you without interference. So all you will need to do is close your eyes, relax, and try to imagine the experiences that I will describe to you.”

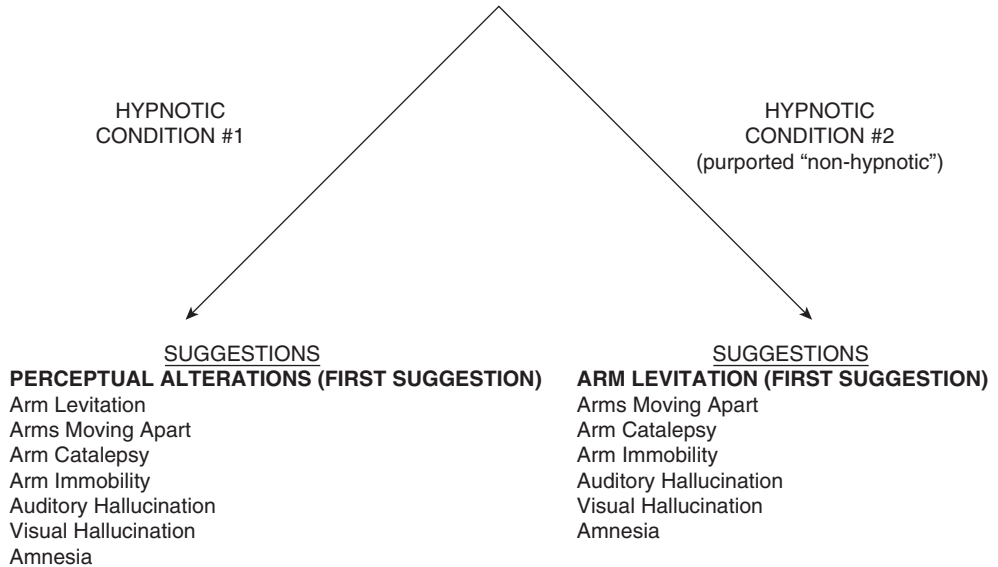


Fig. 1.1 Two hypnotic conditions (by APA Division 30 Definition) once used to contrast hypnotic and nonhypnotic suggestibility as described in Braffman and Kirsch (1999). Necessary components of definition are in bold for each protocol.

suggestion (see Fig. 1.1). In condition #1, the first suggestion is for a perceptual alteration. In condition #2, the first suggestion is for an arm/hand movement. Arm/hand movement is the induction suggestion (i.e. first suggestion) for three different Stanford scales of hypnotic susceptibility; see Table 1.1). Because both conditions are hypnotic by Division 30 standards, it is not surprising then that the authors found that their ‘nonhypnotic’ condition correlated with their hypnotic condition at $r = 0.66$, fairly close to the test–retest reliability of most hypnotizability tests.

Because both conditions had an introduction and because they both had a first suggestion, the relevant difference between these two hypnotic conditions is a contextual one: use of the word ‘hypnosis’ in the introduction of condition #1 and ‘imagination’ in condition #2. If we were to

accept the rationale of the Kirsch and Braffman method, this would mean that the question of a ‘hypnotic effect’ then pivots on ‘Does using the word “hypnosis” in the protocol make a difference to how people respond to subsequent suggestions over and beyond how they respond when the word ‘hypnosis’ is *not* mentioned’. This is a context question of modest interest. It is not a conceptual matter. Many years ago, T. X. Barber (T. X. Barber, 1969; T. X. Barber and Wilson, 1978) compared the effects of instructions with and without the word ‘hypnosis’, and concluded that this is one of several independent variables that can influence responses to suggestions. However, he made this observation without presenting the finding as pivotal.

The problem with these types of constricted definitions is that they drain the science of

its relevance. An example from outside the field of hypnosis helps to illustrate this point. If we wished to study the ‘effect of psychotherapy’, we would have to define psychotherapy-the-procedure. Manuals do this. Would the domain of psychotherapy be adequately captured by the operational definition that: ‘It is only psychotherapy if the word “psychotherapy” is used with the patient; and if the word “psychotherapy” is never used with the patient the procedure ceases to be psychotherapy?’ One might take this approach. But it would be a fateful decision. Using the word ‘psychotherapy’ with the patient is neither necessary nor sufficient for psychotherapy to occur. We know of no psychotherapy researcher who would say it is. Does using the word ‘psychotherapy’ as opposed to not using it make some sort of difference in patient improvement? It is conceivable. But is that what anyone really means by the ‘effect of psychotherapy?’ How interesting is it to define ‘an effect of psychotherapy’, as the difference between how much patients improve with a treatment protocol that mentions the word ‘psychotherapy’ and the same treatment protocol that does not?

We believe that the study of hypnosis is worthwhile only to the extent it reveals something truly interesting about human nature. Scientific understanding is advanced by defining the domain of interest with an optimal definitional resolution that is neither too narrow nor too broad. Such a definition invites empirical and theoretical pluralism, recognizes the incompleteness of our concepts, and thereby enables us to ask and answer questions that matter about human nature more easily. The Division 30 definition and many of the definitions of hypnotic procedure described in the chapters of this handbook are suitable for this purpose.

1.4.3. Hypnosis-as-product

When the introduction and the first suggestion are in place, hypnosis-as-procedure has occurred. The subject has been hypnotized in the sense of being administered the hypnotic procedure. Whether hypnosis-as-product has been elicited is another matter. The hypnotic procedure does not ensure that hypnosis-as-product has or will occur. The necessary

elements must also be present. Broadly speaking, these two elements are attitude and aptitude (see also Barnier and McConkey, 2004).

1.4.3.1. Attitude

As with perhaps all performances, whether they are spelling bees, SAT exams, athletic events, or job evaluations, some variance in performance is explained by attitude. So it is with hypnotic response. Without the right attitude—motivation, expectations and willingness—the subject will not experience hypnosis. The correlations between these variables and hypnotizability scores are typically in the range of 0.20–0.30 (de Groh, 1989; see also Laurence *et al.*, Chapter 9, this volume). Even this very modest relationship between attitude and hypnotizability must be qualified. Spanos and his colleagues (Spanos *et al.*, 1987; Katsanis *et al.*, 1988) warned that the relationship between these variables and hypnotic performance is fan-shaped, such that:

strong negative attitudes and expectations suppressed hypnotizability, whereas positive attitudes and expectations allow subjects to attain high hypnotizability scores. However, positive attitudes and expectations in and of themselves do not engender high hypnotizability (Spanos, 1991, p. 331).

In other words, the relationship between attitude and hypnotizability is less like a dosage effect (the more positive the attitude, the better the performance) and more like a threshold effect (it does not help to be especially willing, but one must be at least *somewhat* willing).

1.4.3.2. Aptitude

The necessary cause that ‘keeps on giving’ in hypnosis research is aptitude: hypnotizability. One of the earliest and most surprising facts uncovered by hypnosis research is that the extent of a subject’s behavioral response to hypnosis is as stable across time as IQ tests (25–30 years, Piccione *et al.*, 1989) and is stubbornly robust across a host of contextual features that one might otherwise expect would impact performance rather dramatically: wordings of procedures, length of procedure, experience level of operator, sex of operator and perceived prestige of operator. This qualifies hypnotizability as a necessary cause—in the complete absence of hypnotizability, there exists no introduction,

no series of suggestions that can induce hypnosis-as-product. No wood, no fire; just a spent match. Of course, in most cases, there is at least some kindling, and in this sense then hypnotizability.

1.4.3.3. When can we say hypnosis-as-product has been attained?

‘State’ (i.e. hypnosis-as-product) will serve our purpose as long as we keep in mind that the term ‘hypnotic state’ is not causal, and is not a unique condition, unvisited by un hypnotized people. What criteria do we apply in determining whether a hypnotic state has been attained? The motor responses of a hypnotized subject provide publicly measurable dependent variables. Generally, if the constellation of responses to standardized suggestions satisfies a criterion, we infer that the procedure induced hypnosis-as-product. But there is little that is unique about these responses, at least as they occur descriptively. There is no superhuman strength; no change in volitional capacity (Kihstrom, Chapter 2, this volume). It is the subject’s experience that makes the hypnotic state exceptional. A key aspect of the hypnotic state is a befuddling of the subject’s ability to identify the causal agent of an action: was it me that moved my right hand, or did it happen by itself (see also Barnier *et al.*, Chapter 6, this volume)?

In all cases then, it is necessary to measure the constellation of evidence, both objective and subjective aspects, to validate the presence of the hypnotic state; i.e. we must determine the extent to which we are confident in saying that a hypnotic state has been attained. It is the alignment of the hypnotic procedure with able and willing subjects that results in hypnotic responses—both objective (e.g. inability to move, motor response to post-hypnotic suggestion) and subjective (e.g. reports of altered sensations)—which constitute hypnosis-as-product. Any one of these can be present with or without the others; our evidence for the hypnotic state increases as our knowledge of these factors increases. But this does not mean that the depth of the state is itself decreased if there is no evidence for one of these factors; we are just less certain hypnosis-as-product has been attained (Killeen and Nash, 2003).

The issue is our level of confidence that the hypnotic state has been attained. This is

something like what we do in the laundry room when we suspect (but do not know) that the iron might have been left in the ‘on’ position overnight. We slowly approach the iron with caution to test whether it is hot relative to the ambient temperature. If it is, it’s ‘on’ and we are pretty confident about that. If it’s exceptionally hot, we might detect it earlier, and be more confident that it is on, but that does not mean that the iron is exceptionally ‘on.’ Likewise, when a subject scores exceptionally high on a standardized hypnotic scale (and subjective measures of experience), we are tempted to say that the subject is exceptionally hypnotized (or deeply hypnotized). This is not the case. Higher scores on difficult hypnotic scales merely allow us to be more confident that the hypnotic state has been attained. In this sense, the criteria we apply (hypnotizability scores and self-reports) function more like alpha levels in statistical sampling theory: nothing about effect size, everything about confidence that key parameters of the system have shifted. Hence, only when we are reasonably confident that all members of a group have attained a hypnotic state are we then privileged to label that group as ‘hypnotized’ in the sense of hypnosis-as-product.

1.4.3.4. Why is defining hypnosis-as-product important?

Calling a cluster of parameter settings a ‘state’ is a matter of semantics and pragmatics, not ontology. It has nothing to do with what ‘is’, and everything to do with the mundane practicalities of simple description. States are not, after all, causal variables; they are indications that key parameters of a system are within a new range (see also Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume). An iron is off or on. You don’t get burned because the iron is on, you get burned because it is hot. A hurricane’s meteorological parameters place it in one of five categories. Your roof blows off, not because it’s a category V hurricane, but because of wind. The state of a system is the status of its key variables at a point in time. A change in these indicates a different state.

All of this matters because it impacts methodology. If we wish to study hypnosis-as-product, we have to use instruments and methodologies that allow us to be relatively certain that a hypnotic

state has been attained (for more on the role of method in inference, see Sheehan and Perry, 1976; Cox and Bryant, Chapter 12, this volume). As Kihlstrom points out in his chapter (Chapter 2, this volume), all too often researchers do not screen for hypnotizability at all, or if they do they screen with a single group-administered measure of hypnotic responsiveness with insufficient range (e.g. typically not enough ceiling). This type of methodology is better suited to look for an effect of hypnosis-as-procedure; i.e. questions such as ‘Broadly speaking what effect does a hypnotic procedure have on behavior and experience?’ However, this methodology is singularly ill-suited to testing for an effect of hypnosis-as-product. In an unscreened sample we cannot be certain that the necessary conditions (attitude and ability) for hypnosis-as-product have been obtained with every subject. Nor can we assume that a low score means that the subject is only a ‘little hypnotized’, and that a high score means that the subject is ‘deeply hypnotized’.

Hence, when we wish to study hypnosis-as-product, we require a group of subjects for whom the necessary conditions of attitude and ability are clearly satisfied and for whom shifts in key parameters of behavior and experience allow us to have a high degree of confidence that hypnosis-as-product has occurred. To identify these individuals, we need to screen subjects carefully. The minimum would seem to be an initial screening with a group procedure (e.g. HGSHS: A; Shor and Orne, 1963), followed by an individually administered procedure of a scale with more difficult items (e.g. SHSS:C; Weitzenhoffer and Hilgard, 1962; or RSPSHS: I and II; Weitzenhoffer and Hilgard, 1967); for other recommendations, see Kihlstrom, Chapter 2; Laurence *et al.*, Chapter 9; Woody and Barnier, Chapter 10, this volume). When highly hypnotizable subjects survive this type of rigorous screening we can be more confident that our dependent measures are tracking something having to do with hypnosis-as-product. We can then ask questions such as: ‘When a person is experiencing a hypnotic hallucination, what is happening in the brain?’ or ‘What are the cognitive shifts that accompany hypnotically induced amnesia?’ or ‘How do individuals move during hypnotically induced partial paralysis?’ Finally,

when we wish to make strong claims about the impact of hypnosis on psychological or medical conditions, we need to be confident that our methods involve hypnosis-as-product and not simply hypnosis-as-procedure, and that clinical clients are experiencing something to do with hypnosis-as-product, and not simply hypnosis-as-procedure.

Summing up, we need to be clear when we talk about hypnosis. Hypnosis is not just what we, as researchers and clinicians, do to people. It is also, much more importantly, what people experience. It is both hypnosis-as-procedure and hypnosis-as-product. In the chapters that follow, our authors may focus on one aspect more than another, they may take different views on these two aspects, or they may agree or disagree with our views. But whatever our individual views may be, as a field we need to be clearer and more generous in our definition of hypnosis because it delineates the entire landscape of enquiry: the questions, the means of answering those questions and the possible answers. We turn now to describe briefly the four sections of this handbook and their 30 chapters.

1.5. A roadmap, revisited

Just as Fromm and Shor (1972, 1979) and Fromm and Nash (1992) solicited chapters for their books from the leading and currently active researchers of the time, so too have we solicited chapters from the most influential and productive experimental and clinical workers in the field. None of the chapters has been published elsewhere. They were written exclusively for this handbook. The chapters present the very latest in theorizing, research and clinical applications of hypnosis. We encouraged our authors to write in such a way that researchers, clinicians and students could all benefit. As Fromm and Nash (1972) noted, readers with extensive background in the field will see wider implications and appreciate challenging subtleties. But, we believe, there is something for everybody here. We encouraged ‘cross-talk’ amongst our authors, sharing the chapters as they were written and revised. Thus, there is some overlap and substantial cross-referencing to build ‘dialogue’ across the chapters. In the

various sections, outlined in a moment, we aimed for a consistent structure to help the reader to develop a coherent picture of the field and of specific areas within it.

1.5.1. Section I: Domain of hypnosis

In two chapters in this section, two of our leading scholars introduce the field of hypnosis. In Chapter 2, Kihlstrom offers his influential definition of hypnosis. He reflects on each element of this definition, especially its historical evolution and current status. Drawing on both earlier discussions of the domain of hypnosis (Hilgard, 1965, 1975; Kihlstrom, 1985) and the very latest theory and research, Kihlstrom sets out the basic terminology and parameters of the field. In Chapter 3, McConkey reflects on generations and landscapes of hypnosis. He explores the evolution of the field and the ways in which particular questions about hypnosis and how they've been answered have been influenced by people, places and times. He surveys the current landscape of the field and lays out the questions that he believes contemporary workers should be addressing now. Readers should keep these questions in mind as they turn to the chapters to follow.

1.5.2. Section II: Theoretical perspectives

In five chapters in this section, current workers in the field describe present (and past) theoretical accounts of hypnosis. In Chapter 4, Woody and Sadler summarize dissociation theories, focusing in particular on the value to hypnosis of theories of dissociated experience versus dissociated control (Hilgard, 1979, 1992; Woody and Bowers, 1994). In Chapter 5, Lynn *et al.* describe socio-cognitive theories, focusing in particular on their response set theory (Kirsch and Lynn, 1999) and the implications of a growing body of evidence on the neural substrates of hypnosis. In Chapter 6, Barnier *et al.* introduce two new cognitive theories: cold control and discrepancy-attribution, which draw heavily from areas outside the domain of hypnosis, especially from cognitive psychology—cold control draws from recent theorizing about conscious awareness and higher-order states,

while discrepancy-attribution draws from recent theorizing and research on memory illusions such as false recall and false recognition. In Chapter 7, Spiegel discusses neurobiological approaches to hypnosis, and argues that hypnotizability is a neurobiological adaptation involving flexible control over attention and perception. Spiegel carefully reviews the very latest data on the neurobiology of hypnosis from his own laboratory and others. Finally, in Chapter 8, Nash offers a clinically-oriented psychoanalytic theory of hypnosis. He argues that a good theory of hypnosis needs ongoing dialog between researchers and practitioners, and that a psychoanalytically informed theory can be the conduit for that dialog.

Whereas some of the theoretical perspectives described in these chapters are well established, some are the latest installment of a particular theoretical tradition, and some are entirely new. But all aim to define the phenomena to be explained and present a coherent account of hypnotic behavior and experience. These authors are historically aware. In paying debts to previous workers in the field, their theoretical accounts offer continuity with accounts presented in Fromm and Shor (1972, 1979) and Fromm and Nash (1992; see also Lynn and Rhue, 1991). Notably, all of these theorists draw broadly for their answers, looking outside the field for 'inspiration and perspiration' (McConkey, Chapter 3, this volume, p. 74). In looking outside the domain for help in answering questions, these theorists and their theories highlight that the study of hypnosis is but one part of an overall investigation of psychological processes. Two final features of these chapters: first, they all point to areas of current and future research—lots of testable ideas for the budding researcher; and second, they all consider the implications of their theories for applications of hypnosis, especially in clinical contexts.

1.5.3. Section III: Contemporary research

In seven chapters in this section, current researchers address important empirical and conceptual issues in the field. In Chapters 9, 10 and 11, the authors address individual

differences in hypnotizability (and related constructs) in distinct, but complementary ways. In Chapter 9, Laurence *et al.* describe the history of the highly hypnotizable person and carefully review successes and failures in the search for correlates of hypnotizability. They consider theoretical implications of this long search and point to the most promising avenues for future research. In Chapter 10, Woody and Barnier survey current hypnotizability measures and their uses, and highlight conceptual and methodological problems that remain to be resolved. They describe work to differentiate the building blocks of hypnotic response and suggest new methods, measures and items for assessing hypnotic ability. In Chapter 11, Tasso and Perez take a broader view of hypnotizability and ask ‘What is the domain of suggestibility?’, ‘Are there individual differences in response to suggestion?’ and ‘Is hypnotizability a part of the domain of suggestibility?’ Their answers are surprising and imply that terms such as suggestibility, waking suggestibility and hypnotic suggestibility are problematic, if not meaningless.

In Chapter 12, Cox and Bryant discuss methodologies of hypnosis that are relevant to all of the chapters that come before and after. They illustrate a variety of techniques and controls with research conducted in their very productive Australian laboratory. As we did above, and as many authors do throughout this handbook, Cox and Bryant distinguish between intrinsic and instrumental hypnosis research. They provide cogent examples of both kinds of research and make a convincing case for the intrinsic interest and instrumental value of hypnosis.

In Chapters 13 and 14, Barabasz and Barabasz, and Oakley, respectively, focus on a burgeoning area of research: the neural underpinnings of hypnosis. In Chapter 13, Barabasz and Barabasz consider advances in neurophysiological techniques and findings during and since ‘the decade of the brain’. They provide a useful sketch of modern neurophysiological techniques and technologies and summarize research presented at the 2002 Tennessee Conference on Brain Imaging and Hypnosis and published since the conference. In Chapter 14, Oakley focuses in detail on intrinsic and instrumental studies of hypnosis involving two brain scanning tech-

niques, positron emission tomography (PET) and functional magnetic resonance imaging (fMRI). He carefully reviews the designs of recent studies to highlight the link between method and inference in this important area. Together, these authors draw attention to an increasingly clear picture of the neurophysiological underpinnings of hypnosis and point towards the need for multilevel explanations.

Lastly, in Chapter 15, Benham and Younger provide the link between the theory, method and data in the preceding chapters to the clinical chapters that follow. They present a scholarly review of mind–body interactions in hypnosis. They highlight issues of methodology and inference, and identify the many areas in which hypnosis plausibly may be useful in influencing and healing the body, and the areas in which hypnosis has convincingly been demonstrated to do so.

1.5.4. Section IV: Clinical hypnosis: treatment and consultation

This section on applied aspects of hypnosis is easily the largest section of the book, containing 16 of the book’s 31 chapters. With chapters authored by the world’s leading authorities on clinical hypnosis, this section stands shoulder to shoulder with the earlier sections on theory and empirical work. Clinical theory, supported by sound case material (and clinical transcripts) from the world’s leading clinicians provides a sturdy hands-on reference for novice and advanced clinicians interested in how hypnosis can be productively woven into treatment planning. This section is divided into three parts: (A) Models of clinical intervention; (B) Methods of clinical intervention: techniques and cases; and (C) Evidence base of clinical intervention and consultation.

In three chapters on models of clinical intervention, three influential clinicians present their distinct models of practice for clinical hypnosis. In Chapter 16, Baker (with Nash) outlines a psychoanalytic approach that emerges smoothly from Nash’s earlier psychoanalytic model of hypnosis. In Chapter 17, Barber outlines a cognitive-behavioral approach. He offers a schematic overview of how hypnosis can be incorporated into cognitive-behavioral

therapies, and illustrates this work with case transcripts. In Chapter 18, Lankton outlines an Ericksonian approach. He thoroughly reviews the corpus of Milton Erickson's work, and illustrates the major principles from case material.

In the next 10 chapters, experienced clinicians describe in detail their clinical work across a wide range of approaches and disorders. Here the emphasis is less on theory, and more on specific clinical technique. All of these chapters are richly illustrated with cases and clinical transcripts. In Chapter 19, Nash lays out the foundations of hypnotic technique: patient preparation, induction techniques, deepening, self-hypnosis and troubleshooting are all covered, with word-for-word scripts for those just beginning. In Chapter 20, Jensen and Patterson describe hypnotic approaches to pain: chronic, acute and medical procedure-related; both inpatient and outpatient. In Chapter 21, Bryant describes hypnotic approaches to anxiety, detailing how to incorporate hypnosis into cognitive-behavioral treatments for anxiety, and giving two detailed clinical examples: one of hypnosis in the treatment of post-traumatic stress disorder, and another in the treatment of simple phobia. In Chapter 22, Yapko specifies five specific targets of hypnotic interventions for depression. He presents detailed case material for two patients, one suffering from major depressive disorder with impulse control deficits, and the other suffering from dysthymia. In Chapter 23, Elkins and Perfect describe hypnotic approaches to treat health-compromising behaviors such as smoking, obesity and eating disorders, and outline the step-by-step progress patients make through the treatment protocols. In Chapter 24, Scott, Lagges and LaClave describe hypnotic approaches to work with children. They offer a helpful protocol for working, not just with the child, but with the parents. They illustrate this with two well-structured cases, one of an 11-year-old child with Crohn's disease, and another of a 16-year-old preparing for a stem cell transplant. In Chapter 25, Covino describes hypnotic approaches to medical problems encountered in consultation. This is another chapter rich in clinical vignettes. In Chapter 26, Moene and Roelofs describe hypnotic approaches to somatoform disorders. This chapter comes from what is generally considered

to be the world's leading treatment facility for conversion paralysis. In Chapter 27, Peebles describes hypnotic approaches to trauma-related dissociative disorders. This is a very sophisticated and detailed account of the outpatient treatment of two very disturbed patients. Finally, in Chapter 28, Morgan and Stegner describe the use of hypnosis on and off the sporting field with athletes. This chapter is organized entirely around extremely interesting case studies.

In three chapters on the evidence base of clinical intervention and consultation, experienced research-practitioners highlight the value of hypnosis by assessing empirical evidence, methods of measuring clinical utility, and hypnosis in the forensic context. In Chapter 29, Moore and Tasso comprehensively review the outcome research in clinical hypnosis, offering guidance on where hypnosis stands as an empirically validated treatment. In Chapter 30, Borckardt and Nash discuss and illustrate with examples how practitioners can make important contributions to the outcome research in hypnosis by using an N of 1 approach. Finally, in Chapter 31, Heap describes the uses and misuses of hypnosis in the courtroom both in the UK and in the USA. Heap organizes his chapter around topics, but uses cases to illustrate issues and outcomes.

Together these 31 chapters capture the ongoing vitality of a discipline that continues to contribute tremendously to our understanding of human nature by asking questions that matter. It is a field that embraces the unexpected and coaxes it to tell a story—in our theory, in our research and with our patients. It is here, as editors, that we are most mindful of how indebted we are to the precedent of sturdy curiosity and relentless scholarship established 36 years ago by Erika Fromm and Ronald E. Shor in their first edited book (1972). We have expanded it, but it is their vision. We believe the authors of our 31 chapters have realized that vision.

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SECTION I

Domain of hypnosis

CHAPTER 2

The domain of hypnosis, revisited

John F. Kihlstrom

Hypnosis is a process in which one person, designated the hypnotist, offers suggestions to another person, designated the subject, for imaginative experiences entailing alterations in perception, memory and action. In the classic case, these experiences are associated with a degree of subjective conviction bordering on delusion, and an experienced involuntariness bordering on compulsion. As such, the phenomena of hypnosis reflect alterations in consciousness that take place in the context of a social interaction.

2.1. Introduction

I have employed one or another close variant of the above definition of hypnosis at least since 1982 (Kihlstrom, 1982, 1985), and it has also served as the starting-point for the ‘consensus’ definition and description of hypnosis crafted by the American Psychological Association’s Division 30, the Society for Psychological Hypnosis, in 1993 (Kirsch, 1994*a,b*; for later definitional developments, see Killeen and Nash, 2003; Green *et al.*, 2005*a*). In this chapter, I reflect on each element of the definition, its historical evolution, and its current status.

2.2. Hypnosis

The term *hypnosis* itself is, of course, something of a misnomer, because the phenomenon in

question has nothing to do with sleep. Although the deep roots of hypnosis may reach back to the ancient temples of Aesculapius (Ellenberger, 1970; Gauld, 1992; but see Stam and Spanos, 1982), the immediate historical predecessor of hypnosis is the *animal magnetism* of Franz Anton Mesmer (for a definitive biography, see Pattie, 1994). Or was it? Peter has recently argued that the true ancestor of hypnosis is the exorcism practiced by Johann Joseph Gassner (1729–1779), a Catholic priest who performed exorcisms throughout Europe right before Mesmer came onto the scene (Peter, 2005). Although the similarity between some of Gassner’s practices and Mesmer’s practices is undeniable, the prize probably should remain with Mesmer. After all, Gassner offered a supernatural theory of illness, while Mesmer at least embraced the principle that disease had natural causes and cures. But Mesmer’s theory—that his effects were mediated by a physical force analogous to magnetism—was wrong too, and from a scientific perspective we can now understand both his cures and Gassner’s cures as the product of ‘imagination’—but no less genuine for that. It is not Mesmer’s fault that, in the late nineteenth century, psychology was not permitted the status of a true science.

Mesmer’s theory was discredited in 1784, by a French royal commission chaired by Benjamin

Franklin (Bailly, 1784/2002; Franklin *et al.*, 1784/2002; for recent commentaries, see Forrest, 2002; Kihlstrom, 2002; Laurence, 2002; Lynn and Lilienfeld, 2002; McConkey and Perry, 2002; Perry and McConkey, 2002; Spiegel, 2002), but his practices lived on—first as *mesmerism*, a term introduced to English in 1784 by Benjamin Franklin himself (Pepper, 1911), and which lasted long enough to be used by Elliotson (1843/1977) and Esdaile (1846/1977). But while Mesmer's practices were revived in the early nineteenth century, their identification with the man himself must have created a public relations problem; a new label was needed. Puysegur (1807), Deleuze (1813) and others among the second generation of mesmerists proffered the master's own preferred label, *animal magnetism*, a term which persisted almost into the modern era (Binet and Fere, 1888). But this was unsatisfactory—not least because the Franklin Commission had disproved the notion that magnetism had anything to do with the phenomenon.

Of course, a major transition in conceptions of hypnosis had begun in 1784, even before the Franklin Commission had completed its work, when Puysegur magnetized Victor Race, a young shepherd on his estate. Instead of undergoing a magnetic crisis, Victor fell into a sleep-like state in which he was nonetheless responsive to instructions, and from which he awoke with amnesia for what he had done. *Artificial somnambulism*—a term introduced by Puysegur himself—had a double advantage, in eliminating references to both Mesmer and magnetism, and also eliminating the convulsive seizures that were the hallmark of the mesmeric crisis. Here, I think, we have the true predecessor of modern hypnosis: a sleep-like state in which the subject is responsive to the—to the what? *Mesmerist* won't do, nor will *magnetizer*, for the reasons stated. Perhaps *somnambulizer*? Not likely.

The problem was solved once and for all by Braid, who coined the terms *neurypnology* and *neuro-hypnotism*—which quickly—and, as Gauld (1992, p. 281) remarks, 'mercifully'—dissolved into *hypnotism*. Although Puysegur had offered a psychological theory of animal magnetism, in terms of the influence of the magnetizer's will on the subject, Braid (1855) also offered the first psychophysiological theory of

hypnosis, involving monoideism—the concentration of attention on a single object. With this one-two punch, renaming the phenomenon and offering a new, more scientifically acceptable theory to explain it, Braid buried Mesmer and animal magnetism once and for all (Kravis, 1988). Although the term *hypnosis* had appeared before Braid's time (Gravitz and Gerton, 1984; Pattie, 1990), Braid gave us the whole vocabulary for hypnosis as we understand it today, offering clear definitions of the terms *hypnotic*, *hypnotize*, *hypnotized*, *hypnotism*, *dehypnotize*, *dehypnotized* and *hypnotist* (Kihlstrom, 1992*b*). According to the *Oxford English Dictionary*, the word *hypnosis* entered the medical dictionary in 1882—although the same entry flirted with *Braidism*.

These terms have stuck with us, through what Gauld (p. xi) aptly termed 'the heyday of hypnotism' in the run-up to the twentieth century (Charcot, Janet, Liebeault, Bernheim, James, Prince and Sidis), through the first systematic experimental work by Young (1925, 1926) and Hull (1933), and into the post-war revival of clinical and experimental hypnosis at the hands of Weitzenhoffer (1953), Gill and Brenman (1959), Orne (1959), Sutcliffe (1960, 1961), E. R. Hilgard (1965), Barber (1969), and Sarbin and Coe (1972). Although some authorities were once so disturbed by the term that they felt compelled to enclose it in scare quotes (e.g. Barber, 1964), that is all over now (Barber, 1999).

Unfortunately, the word *hypnosis* has also been appropriated by anesthesiologists, to refer to the loss of consciousness that is one of the three aspects of 'balanced anesthesia' (the others are areflexia, or the paralysis of the skeletal musculature, and analgesia, or the lack of pain sensation; see Kihlstrom and Cork, 2005). We now know that hypnosis is not anything like sleep, physiologically (Evans, 1979); nor is general anesthesia, for that matter. And although sleep is a frequent metaphor used in hypnotic inductions, and relaxation is a typical accompaniment to hypnosis, we now know that neither is necessary for hypnosis to occur (Banyai and Hilgard, 1976; Alarcon *et al.*, 1999). At this point, then, it is clear that the term *hypnosis* has become functionally autonomous of its origins (Allport, 1937). Nevertheless, the term has long served to label a particular set of phenomena that we are

interested in, of human mental function, and we should just stick with it.

2.3. Process

In the first sentence of previous versions of the definition given at the outset, I described hypnosis as a ‘social interaction’—which indeed it is. However, hypnosis is not *just* a social interaction: it also involves certain changes in experience, thought and action. As such, one could just as easily write that ‘hypnosis is an altered state of consciousness ...’. Describing hypnosis as a social interaction acknowledges the role that social influence plays in the process, but it also may privilege the social over the cognitive. Accordingly, I now prefer the somewhat more neutral term *process* (‘Hypnosis is a process in which one person ...’), in the dictionary sense of a dynamic series of ongoing actions or events. Certainly hypnosis is a process in this sense, beginning with an induction procedure, continuing with whatever transpires while the subject is hypnotized, and ending with the termination of hypnosis and, perhaps, the testing of post-hypnotic suggestions. What goes on in this process—both interpersonally and intrapsychically—is what interests us as hypnosis researchers and as practitioners.

2.4. Hypnotist

The mythical image of the hypnotist is, arguably, the character Svengali in George du Maurier’s 1895 novel *Trilby*, and the 1931 film made from it, starring John Barrymore and Marian Marsh (Kihlstrom, 1987): the eyes, the passes with the hands, the rapport with the subject, the undercurrent of sexuality (of course, Svengali is male and Trilby female), the risk of harm and the intimations of the paranormal. More importantly, though, there is the idea that the hypnotist possesses a particular personality, which affords him a special power to control others—for good and for evil. In stark contrast to this image, the literature on hypnotist characteristics, and their effects on hypnosis, is remarkably thin. Partly, I think, this is due to methodological considerations. Simply to investigate the effect of the hypnotist’s gender on hypnotizability would require that a fairly large, representative sample of men

and women be trained as hypnotists and then turned loose on an even larger group of subjects (Coe, 1976; D’Eon *et al.*, 1979; Banyai, 1991, 1998). It’s all a very daunting task.

So far as the laboratory is concerned, we assume that the hypnotist functions much like a coach, or a tutor, whose job is to help subjects to become hypnotized, and to experience hypnotic suggestions. The coach–tutor analogy breaks down, however, in that it is arguably helpful if a tennis coach can play tennis, or if a math tutor knows mathematics. But it does not seem to be important whether the hypnotist is hypnotizable. Ted Barber was, by the accounts of those who knew him, highly hypnotizable; Jack Hilgard was not. It is tempting to speculate on the role these individual differences might have played in designing their programs of hypnosis research, with Barber (1969) believing that hypnotic phenomena were possible for anyone who tried hard enough, and E. R. Hilgard (1965) developing a whole battery of scales for measuring hypnotizability. Surely the most experienced hypnotist of all time is the person whose voice is heard on the standard recording of the Harvard Group Scale of Hypnotic Susceptibility, Form A—a professional radio announcer without any training in psychology or hypnosis (L. Dumas, 1964; Orne, 1964).

In the clinic, things may be different. But even there, the empirical literature—as opposed to folklore—on hypnotist effects is sparse (Diamond, 1984). While anyone can be a hypnotist, it takes special training to use hypnosis appropriately in medicine, dentistry or psychotherapy. Some of that training is in hypnosis, and in an age when hypnotists advertise in the Yellow Pages, consumers naturally wonder how they can ensure that a practitioner is appropriately trained. Fortunately, there are organizations in the USA such as the Society of Clinical and Experimental Hypnosis which provide workshops in various skill areas, and agencies such as the American Board of Clinical Hypnosis to certify competence in the use of hypnosis in medicine, dentistry, psychotherapy and clinical social work. Similar organizations exist around the world, including in Australia and the UK. These organizations and agencies have their place, but when it comes to evaluating a clinical hypnotist the heuristic offered by Martin Orne

(personal communication, frequently repeated) is probably the best: nobody should treat a condition with hypnosis that they are not qualified to treat without hypnosis.

The idea that hypnosis involves two people, a hypnotist and a subject, would seem immediately contradicted by the phenomenon of self-hypnosis, in which there does not seem to be any hypnotist at all. At one level, we can say that there is no contradiction, because in a very real sense all hypnosis is self-hypnosis. The hypnotist can recite an induction procedure and make suggestions for various experiences, but it is the subject who must actively participate in the process; without that active participation, nothing happens. Comparisons of self-hypnosis with more traditional 'hetero'-hypnosis show that they are highly correlated (Shor and Easton, 1973; Orne and McConkey, 1981; L. S. Johnson *et al.*, 1983). It may be more difficult to give oneself a suggestion that there is a fly buzzing annoyingly around one's head, and easier to believe that the fly is there when one does not already know that it is simply a suggestion from a pre-printed script. But it is clear that the overlap between the two forms of hypnosis is considerable.

At the same time, it must be said that much of what passes for 'self-hypnosis,' especially in the clinic, more closely resembles a relaxed state of reverie, and imagery, in which subjects are allowed to construct their own experience without any particular direction from the hypnotist (Fromm *et al.*, 1981; Olness, 1981). The relationship of this form of hypnosis to the more traditional 'hetero' form is open to question (Kahn *et al.*, 1989)—as is the question of whether this form of 'self-hypnosis' should really be called hypnosis at all.

2.5. Subject

Surely the main reason that the hypnotist has so little impact on what goes on in hypnosis is, simply, that virtually all the action is in the subject. The importance of individual differences in hypnotic susceptibility has long been recognized (Friedlander and Sarbin, 1938), and the development of the Stanford Hypnotic Susceptibility Scales, Forms A, B and C (SHSS:A, B and C; Weitzenhoffer and Hilgard, 1959, 1962) put the

measurement of hypnotizability on a firm quantitative basis (E. R. Hilgard, 1965). By introducing a standardized procedure for subject selection, the Stanford scales made it possible for different laboratories to replicate and extend each other's studies. Moreover, the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor and Orne, 1962) injected substantial economies of scale into the assessment procedure.

The availability of reliable and valid instruments for measuring hypnotizability makes it possible to examine the personality and cognitive correlates of this cognitive skill. Here, it must be said, the yield has been relatively light. One of the most frustrating aspects of the post-war revival of hypnosis research was the discovery that, while hypnotizability could be reliably measured, hypnotizability simply did not appear to correlate substantially with the sorts of personality characteristics measured by the major personality inventories, such as the Minnesota Personality Inventory (MMPI) and the California Psychological Inventory (CPI; E. R. Hilgard, 1965). Nor does hypnotizability appear to be related to individual differences in 'cognitive style,' such as field dependence–independence (A. H. Morgan, 1972).

The mystery was gradually resolved by the discovery that hypnotizability does correlate with scales measuring the tendency to have experiences such as those of hypnosis, but outside the hypnotic situation (Shor, 1960; As, 1962, 1963; As *et al.*, 1962; Shor *et al.*, 1962; J. R. Hilgard, 1965). The strongest correlate of hypnotizability discovered so far is absorption, or the tendency to become absorbed in various sorts of sensory, cognitive and imaginal experiences (Tellegen and Atkinson, 1974; for a review, see Roche and McConkey, 1990). Absorption and imaginative involvement simply were not represented on the scales of the MMPI and CPI; put another way, the individual differences measured by these inventories fall outside the domain of hypnosis. However, absorption is related to at least some facets of openness to experience, one of the 'Big Five' dimensions in the structure of personality (Glisky *et al.*, 1991).

Even the correlation between hypnotizability and absorption is still too small to permit individual levels of hypnotizability to be predicted

with any confidence from personality measures. But at least they tell us that individual differences in the specific domain of hypnosis are connected with individual differences in the wider domain of personality. Still, even openness is multifaceted: while hypnotizability is correlated with absorption, it is not correlated with intellectance or liberalism (Glisky and Kihlstrom, 1993).

Other than this, we know remarkably little about hypnotizable individuals. Despite the implications of the Svengali myth, there is no appreciable gender difference in hypnotizability (Weitzenhoffer and Weitzenhoffer, 1958), and any difference there might be should not be taken too seriously, as the literature on gender differences presents a host of interpretive difficulties (Maccoby and Jacklin, 1974; Tavris, 1992; Hyde, 2005). Stereotypically 'feminine' individuals are no more hypnotizable than stereotypically 'masculine' ones (Kihlstrom, 1980).

Part of the difficulty in establishing meaningful correlates of hypnotizability may be methodological. Individual differences in personality are commonly measured by questionnaires, while hypnotizability is measured by work samples of actual performance. Such heteromethod correlations (Cronbach and Meehl, 1955; Loevinger, 1957; Campbell and Fiske, 1959) are usually low. Nevertheless, the typical personality-hypnosis correlation—including the correlation between absorption and hypnotizability—is low even by the standards of Mischel's (1968) 'personality coefficient'. It may be that more interesting results will be obtained when both predictor and criterion are measured by the same performance-based methods. As an example of the sort of work that might be done, Dixon and his colleagues found that hypnotizability was correlated with individual differences in automatic processing, as measured by the Stroop test (Dixon *et al.*, 1990; Dixon and Laurence, 1992). Research of this sort may help link the domain of hypnosis to the wider domain of attention, at both the psychological and neuroscientific levels of analysis.

Hypnotizability shows an interesting developmental trend across the lifespan (Cooper and London, 1971; A. H. Morgan and Hilgard, 1973), but the results of these cross-sectional studies remain to be confirmed by longitudinal research.

Moreover, the determinants and correlates of this developmental trend remain largely unexplored (J. R. Hilgard, 1970). For example, little has been done to connect the development of hypnotizability with the development of the theory of mind in young children (Welchross, 1999). Surely, the child's capacity to be hypnotized must be related to his or her ability to appreciate mental states as such, as well as the distinction between reality and imagination. Along the same lines, response to direct and challenge ideomotor suggestions may follow different developmental trajectories, possibly related to the development of the general capacity to inhibit action; a similar point may apply to positive versus negative hallucinations, and to age regression as opposed to amnesia.

Once established, hypnotizability seems to be about as stable as other cognitive skills, such as intelligence (Morgan *et al.*, 1974; Piccione *et al.*, 1989). But how is it established? Some research seems to indicate a genetic contribution to individual differences in hypnotizability (A. H. Morgan *et al.*, 1973), possibly mediated through the attentional system (Raz *et al.*, 2004a). Evidence for the acquisition of hypnotizability through experience comes mostly from studies of childhood imaginative involvements (J. R. Hilgard, 1970). Perhaps the most interesting developmental finding to date is of an age-by-gender interaction, such that women of childbearing age tend to be more hypnotizable than their male counterparts (A. H. Morgan and Hilgard, 1973). On the assumption that most of these women were in fact stay-at-home mothers, one interpretation of this finding is that a capacity for hypnosis is sustained in parents—male or female—who participate in their children's imaginative involvements (J. R. Hilgard, 1970). Given the cultural changes that have occurred since the early 1970s, a more balanced test of this hypothesis is now possible.

Although modern theories of individual differences generally assume that personality characteristics are distributed along continuous dimensions (such as the 'Big Five' personality traits; Wiggins and Trapnell, 1990) as opposed to discrete categories (such as the classical typology of melancholics, choleric, sanguines and phlegmatics; Kant, 1798/1978), the notion that individual differences may resolve into more or

less discrete types has currently regained a foothold in the literature (Gangestad and Snyder, 1985; Waller *et al.*, 1996). Perhaps hypnotic virtuosos constitute a discrete type of person, qualitatively different from those who do not possess a particular talent for hypnosis (Balthazard and Woody, 1989; Oakman and Woody, 1996). For that matter, White (1937) once suggested that there was more than one type of hypnosis. Perhaps the existence of more or less discrete profiles of hypnotic ability (E. R. Hilgard, 1965; Brennehan and Kihlstrom, 2006;) suggests that there may be several different kinds of hypnotic virtuosos.

2.6. Suggestions

Suggestion is central to hypnosis. On the HGSHS:A and SHSS:C, hypnosis is induced by suggestions for relaxation, focused attention and eye closure; and hypnotizability is measured by response to suggestions for arm catalepsy, age regression, auditory hallucination, post-hypnotic amnesia, and the like. The connection between hypnosis and suggestion is so strong that the two domains have been concatenated throughout the modern history of the field (Bernheim, 1886/1889; Hull, 1933; Weitzenhoffer, 1953; Braffman and Kirsch, 1999; Kirsch and Braffman, 2001). The concept of *neutral* hypnosis, as a distinct psychological state independent of the subject's response to suggestions, has had its advocates (e.g. Ludwig and Levine, 1965; Kihlstrom and Edmonston, 1971; Edmonston, 1977, 1981). Still, the fact remains that what is perennially interesting about hypnosis is how the hypnotized individual responds to suggestions.

It has to be said, however, that not all suggestions, or forms of suggestibility, belong in the domain of hypnosis (for a detailed analysis, see Tasso and Perez, Chapter 11, this volume). The suggestion that there is a fly in the room, buzzing annoyingly around the subject's head, or that there is a voice coming over a loudspeaker asking the subject questions, is not the same as Joseph's suggestion, recorded in *Genesis* (xl, 14) that Pharaoh let him out of prison; or the suggestion, written on a slip of paper deposited in a box provided for this purpose, that the library install wireless Internet access.

Eysenck and Furneaux (1945) distinguished between *primary* ideomotor suggestibility, involving direct verbal suggestions for bodily movements, and *secondary* suggestibility, involving indirect, nonverbal suggestions for sensory-perceptual experiences. Although this distinction makes some sense, conceptually, it has not always held up empirically (Evans, 1967).

Moreover, it seems clear that there are forms of suggestibility that go beyond the primary–secondary distinction. For example, Eysenck proposed a category of *tertiary* suggestibility, to cover persuasion effects in attitude change (Eysenck, 1947). Social psychologists have studied aspects of *tertiary* suggestibility involving conformity, persuasion and other forms of social influence (Zanna *et al.*, 1987; Zimbardo and Leippe, 1991; Forgas and Williams, 2001); these appear to be largely unrelated to hypnotizability (Moore, 1964). There is also the placebo effect, and related effects of suggesting to patients that they are receiving medical treatment (Harrington, 1997; Shapiro and Shapiro, 1997; Kihlstrom, 2003). Although placebo responses are mediated by expectation (Kirsch, 2004), and expectation plays some role in hypnosis (Council *et al.*, 1986), hypnotic analgesia appears not to be mediated by the placebo response (Evans, 1967, 1976; McGlashan *et al.*, 1969). Furthermore, expectancies turn out to play only a modest role in hypnotic responsiveness (Shor *et al.*, 1984; Benham *et al.*, 2006). Finally, there is *interrogative* suggestibility, assessed in terms of the responses of eyewitnesses, patients and others to leading questions (Gudjonsson, 1984; Doris, 1991; Eisen *et al.*, 2002; Shobe and Kihlstrom, 2002). This also appears to be independent of hypnotizability (Register and Kihlstrom, 1988). The domain of hypnosis will be defined more clearly as the relationships among the various forms of suggestibility, and their respective underlying mechanisms, receive further study (Gheorghiu *et al.*, 1989; Schumaker, 1991).

Based on present knowledge, hypnotic suggestions most closely resemble primary ideomotor suggestions, suggesting that they belong to overlapping domains (E. R. Hilgard, 1965). Still, the overlap is far from complete: in the first place, indirect suggestions such as those that characterize secondary suggestibility are not

unknown in hypnosis (Yapko, 1983; McConkey, 1984; Lynn *et al.*, 1993). Both hypnosis and primary ideomotor suggestibility entail responses to direct suggestions, but close analysis reveals that hypnotic suggestions are directed toward perceptual-cognitive experiences, rather than overt motor behaviors. We do not suggest to subjects simply that their outstretched arms are rising or falling; rather, we suggest that they are weighted down by a heavy object or being lifted up by helium balloons. In hypnosis, the overt motor behavior follows from the subjective experience—a point to which we shall return.

There are further complexities even within this expanded domain of primary suggestion. In the first place, ideomotor suggestions can be further classified into two types: *direct suggestions* for the facilitation of some motor behavior, such as eye closure or arm catalepsy; and *challenge suggestions* for the inhibition of motor behavior, such as arm rigidity or arm immobilization. Moreover, hypnotic suggestions can affect perceptual and cognitive experiences as well as motor behaviors. Interestingly, these perceptual-cognitive suggestions also come in two forms that roughly parallel direct and challenge ideomotor suggestions. Some cognitive suggestions involve the production of percepts and memories, such as the dream and positive auditory hallucination ('loudspeaker') items of SHSS:C; others involve the inhibition of percepts and memories, such as the negative visual hallucination ('three boxes') and post-hypnotic amnesia items of the same scale. In every case, however, there is a more or less direct suggestion that a state of affairs exists that does not accord with objective reality. The Stanford scales, which assess the subject's response to such suggestions, thus represent a prototype that defines the domain of hypnosis.

The distinctions between direct and challenge ideomotor suggestions, and between ideomotor and cognitive suggestions, has been repeatedly confirmed by multivariate analyses of the Stanford and Harvard scales (e.g. E. R. Hilgard, 1965; Spanos *et al.*, 1980; for a review, see Balthazard and Woody, 1985). Discovery of the multidimensional nature of hypnotic suggestion led to the development of the Stanford Profile Scales of Hypnotic Susceptibility, Forms I and II (SPSHS:I and II; Weitzenhoffer and

Hilgard, 1963, 1967). Unfortunately, interpreting these three factors is complicated by the fact that their constituent items differ in difficulty levels. Direct suggestions tend to be relatively easy, while challenge and cognitive suggestions tend to be relatively difficult. Accordingly, some theorists (e.g. Coe and Sarbin, 1971) have argued that the apparent factor structure of hypnotic suggestions is actually an artifact of item difficulty, and that, appearances to the contrary, a 'single role-relevant skill' (p. 1) runs through the matrix of item correlations. Untangling content from difficulty level is not easy, because difficulty levels of the items of the Stanford and Harvard scales are fixed by the standardized procedures established for their administration and scoring.

Some progress can be made, however, once it is understood that the difficulty levels of various items, as fixed in the standardized scales of hypnotic susceptibility, are largely arbitrary. For example, the hand-lowering suggestion of HGSHS:A, generally considered a very easy item, can be made more difficult by requiring that the subject's hand drop further, faster, than what is specified in the standardized scale. Similarly, post-hypnotic amnesia, generally considered a difficult item, can be made easier by adopting a looser criterion for initial forgetting or subsequent reversibility (Kihlstrom and Register, 1984). When item difficulty levels are adjusted in this manner, the three-factor structure still emerges (Tellegen and Atkinson, 1976; Kihlstrom *et al.*, 2006). Moreover, a cluster analysis of the original standardization data for SPSHS:I and II uncovered 12 distinct profiles of hypnotic ability, independent of overall level of hypnotic response (Brenneman and Kihlstrom, 2006). A recent, highly sophisticated multivariate analysis confirms that the three basic factors of hypnotizability—direct, challenge and cognitive suggestions—are not an artifact of item difficulty (Woody *et al.*, 2005). The situation is thus roughly analogous to the structure of intelligence, with various group factors collected by a single overarching factor of general hypnotizability. Hypnosis is closely related to primary suggestibility, but the domain of primary suggestibility must be expanded to include perceptual-cognitive effects as well as ideomotor responses.

2.7. Imaginative experiences

Hypnotic experiences take place in the realm of imagination—there isn't *really* a balloon lifting up the subject's hand, or glue holding the subject's hands together, or a loudspeaker on the wall; nor does the age-regressed subject grow smaller in the chair. Nevertheless, the relationship between hypnosis and mental imagery is rather vexed. For example, hypnotizable individuals have no better mental imagery abilities than the rest of us—though here, admittedly, the fault might lie with the scales used to measure mental imagery (Kearns and Zamansky, 1984; K. S. Bowers, 1992; Glisky *et al.*, 1995). Of course, it may simply be that better, more performance-oriented, methods of assessing imagery (Kosslyn *et al.*, 1984) will yield substantial correlations with hypnosis, of a sort that have so far eluded empirical investigation.

On the other hand, examination of the structure of hypnotic suggestions, and of the phenomenology of hypnotic experience, suggests that hypnotic experiences bear only a tangential relationship to mental imagery as we typically experience it. Note, first, that while hypnotic experiences surely take place in imagination, hypnotic suggestions do not typically ask subjects to *imagine* anything. Consider, for example, the Fly Hallucination item (#9) on HGSHS:A. Subjects are not asked to imagine that there is a fly buzzing around the room. Instead, they are informed—it is suggested—that there *is* one. And hypnotic subjects respond accordingly. Hypnotic experiences take place in imagination, but they do not have the same experiential qualities as ordinary mental imagery. Mental images are deliberately, consciously constructed, while hypnotic experiences are generally accompanied by an experience of involuntariness. It is this experience of involuntariness, not the vividness of mental images that gives hypnotic experiences their hallucinatory quality.

There are exceptions, of course, even on HGSHS:A itself. But in general, when hypnotic suggestions use the word *imagine*, they do so in much the same way that they use the word *sleep*. If a mental image is defined as a percept in the absence of a stimulus, then hypnotic suggestions definitely involve imagery. But if a hallucination

is defined as a mental image that is out of control, hypnotic experiences are closer to hallucinations than to ordinary mental images. In this respect, just as hypnosis should not be solely identified with suggestion, so hypnosis should not be narrowly identified with imagination. Accordingly, to relabel hypnotic susceptibility as imaginative suggestibility (Braffman and Kirsch, 1999; Kirsch and Braffman, 2001) would be to risk making a category mistake.

2.8. Perception, memory and action

The phenomena of hypnosis are mostly cognitive in nature, involving alterations in perception and memory. Hypnotized subjects perceive things that *aren't* there, and fail to perceive things that *are* there. They experience themselves as if they were young again. They dream even though they are not asleep. They cannot remember what happened to them while they were hypnotized, and they remember things that did not actually happen to them. Even the ideomotor phenomena of hypnosis are cognitive in nature, because the motor behaviors follow from suggestions for perceptual change. In the direct suggestions, subjects *perceive* balloons tied to their wrists, or heavy objects in their hands, and then the limbs move accordingly. In the challenge suggestions, they *feel* their hands glued together, and have difficulty taking them apart; they *feel* their outstretched arms stiffening, and then have difficulty bending them. So too, for post-hypnotic suggestions, the essence of which is not that subjects touch their ankles when the experimenter taps, but that they feel an *urge* to do so, do not *know* why and do not *remember* the suggestion. The behavioral responses by which we measure hypnotizability follow from suggestion-induced changes in perception and memory.

Perceptual-cognitive changes lie at the heart of most hypnotic phenomena, but cognition is not all there is to mental life. As Kant put it, 'there are three irreducible faculties of mind: knowledge, feeling, and desire' (Kant, 1781/1929, p. 14). So what of the other two elements in the 'trilogy of mind' (E. R. Hilgard, 1980)? What role do emotion and motivation

play in the phenomena of hypnosis? These have mostly gone unexamined, but there are hints in the literature that hypnosis can affect emotional and motivational processes as well.

For example, Damaser *et al.* (1963) employed hypnotic suggestion to investigate the physiological correlates of various emotional states. Levitt and his colleagues observed the effects of suggested anxiety, covered by a further suggestion for post-hypnotic amnesia, on various aspects of test performance (Levitt, 1967; Levitt and Chapman, 1979). Similarly, Blum and his colleagues explored the effects of hypnotically suggested arousal on various aspects of performance (e.g. Blum and Porter, 1972). This research, as well as Watkins's clinical work on the 'affect bridge' (Watkins, 1971), set the stage for Bower's use of hypnotically suggested emotions in his pioneering studies of mood-congruent and mood-dependent memory (Bower *et al.*, 1978, 1980; Bower, 1981). The memory effects originally reported by Bower have since been replicated using nonhypnotic methods (e.g. Eich, 1995; Bower and Forgas, 2000). However, difficulties in replicating the original hypnosis experiments have perhaps contributed to a decline in research on hypnotically elicited emotion. This is an area that warrants further investigation—especially as interest in emotion is being revived within psychology, and researchers seek reliable means of manipulating subjects' emotional states (Larsen and Sinnett, 1991; Westermann *et al.*, 1996; Nummenmaa and Niemi, 2004; Goritz and Moser, 2006).

Many of the cognitive effects of hypnosis come in contrasting forms, such as the positive and negative hallucinations, and this may be the case for the emotional effects as well. In the Bower studies, the hypnotic suggestion appears to operate in the manner of a positive hallucination—subjects experience an emotion in the absence of the appropriate stimulus. By analogy to negative hallucinations, Bryant and his colleagues have employed suggestions for 'emotional numbing', which may reduce subjects' conscious awareness of their emotional states (Bryant and Mallard, 2002; Bryant, 2005). Although hypnotic analgesia reduces both the sensory-perceptual and affective components of pain (E. R. Hilgard, 1967; Knox *et al.*, 1974), appropriately worded suggestions can also

dissociate them—so that, for example, the hypnotized patient can feel pain but not suffer from it. Interestingly, these suggestions produce different patterns of brain activity: sensory pain activates the primary somatosensory cortex, while suffering activates the anterior cingulate gyrus (Rainville *et al.*, 1997, 1999; Price *et al.*, 2002). Emotional numbing may operate in the manner of a suggestion for analgesia, or amnesia, at the level of conscious awareness. Just as Hilgard's 'hidden observer' studies showed that pain can be represented subconsciously despite the experience of analgesia (Knox *et al.*, 1974; E. R. Hilgard *et al.*, 1975, 1978), so it may be that hypnotically suggested emotional numbing impairs explicit, or conscious, affective experience but spares implicit, or unconscious, representations of emotional state (Kihlstrom *et al.*, 2000).

So far as motivation is concerned, it should be noted that Hilgard's attraction to the field was partly an outgrowth of his longstanding interest in problems of motivation, and in particular the distinction between voluntary and involuntary acts (E. R. Hilgard, 1964). Theorists of a psychodynamic bent have also made use of hypnosis to study problems of unconscious motivation—an enterprise which E. R. Hilgard (1961, 1964) also endorsed. In one prominent line of research, based on a paradigm originally devised by Luria (1932), subjects received suggestions for a paramnesia, or false memory, that they had committed some socially undesirable act—the suggestion itself was covered by a further suggestion for amnesia (Huston *et al.*, 1934; Reyher, 1967; Sommerschild and Reyher, 1973). Alternatively, subjects received suggestions for a variant on age regression, in which they were asked to relive a conflictual, ego-threatening event from childhood (Blum, 1967, 1979). Unfortunately, the demand characteristics of such experiments are fairly clear, making interpretation of the results difficult (Reyher, 1969; Sheehan, 1969, 1971*b*). Nevertheless, the work deserves to be remembered as an important line of experimental research on psychodynamic theory.

Motivation is also relevant to a question that has intrigued investigators ever since the beginning of experimental hypnosis research: whether hypnotic suggestions of various kinds can enhance human performance—what Marcuse

(1959) called ‘the generation of hypers’ (as in hyperpraxia, or enhanced muscular performance, hyperesthesia, or enhanced sensory acuity, and hypermnnesia, or enhanced memory) and the ‘wantos’ (as in ‘Want to make the weak as strong as a lion?’). A vast experimental literature on the hypnotic transcendence of normal voluntary capacity, mostly with variants on the London–Fuhrer paradigm (London and Fuhrer, 1961) in which hypnotizable and insusceptible subjects were tested in baseline, nonhypnotic and control conditions, yielded largely negative results (e.g. Evans and Orne, 1965; Orne, 1966; Sheehan and Perry, 1976). In general, these studies found that appropriately motivated insusceptible subjects performed as well or better on measures of muscular strength and endurance than hypnotizable subjects. Similarly, there is no experimental evidence that hypnosis reliably enhances learning or memory (Council on Scientific Affairs, 1985; Kihlstrom and Eich, 1994; Whitehouse *et al.*, 2005). Finally, provocative evidence that hypnosis could improve visual acuity in myopic subjects (Graham and Leibowitz, 1972) has been called into question by more recent analyses (Raz *et al.*, 2004b).

Most of these studies employed direct suggestions and exhortations for improved performance. However, Slotnick *et al.* (1965) obtained different results when they added *involving* instructions to the usual exhortations. In these instructions, subjects were asked not simply to improve their performance, but also to *think* of themselves as ‘stronger and more capable’. Under these conditions, exhortation plus involvement yielded a marked improvement in performance over exhortations alone, and this was true even when the involving instructions were administered in a nonhypnotic control condition. Because all the subjects in this experiment were hypnotizable, it seems likely that the effects of the involving instructions were mediated by the capacity for absorption and imaginative involvement that is correlated with hypnotizability. Although it would be useful to replicate this experiment with insusceptible subjects as well, it is possible that *imagining* oneself stronger can in fact make one (a little) stronger, in the manner of the self-fulfilling prophecy (Snyder, 1984), whether that imagination takes place in hypnosis or not.

One motivational application of hypnosis is in sports psychology (Unestahl, 1979; W. P. Morgan, 1980, 2002; Mairs, 1988; Taylor *et al.*, 1993). Unfortunately, field studies in this area have rarely taken advantage of the analytical power of paradigms such as the London–Fuhrer design. As a result, it is often unclear whether any improvements in performance are actually mediated by increased motivation—as opposed to self-distraction, analgesia-like pain relief or even absorption in the athletic performance (i.e. ‘flow’; Csikszentmihalyi, 1990; Grove and Lewis, 1996; Pates and Maynard, 2000).

2.9. Classic instance

The effects of hypnotic suggestions—the classic case or instance—are not experienced by, or observed in, everyone who is hypnotized. The phenomena that have enticed theorists from James, Freud and even Pavlov to today are most likely to occur in those subjects who are most highly hypnotizable (Heap *et al.*, 2004). And, as a corollary, there is little point in studying hypnosis in subjects who cannot experience it. Accordingly, hypnosis researchers devote an extraordinary amount of time, effort and resources to assessing the hypnotizability of the subjects who participate in their experiments (for a comprehensive summary of assessment procedures, see Barnier and McConkey, 2004). The optimal screening procedure for hypnosis research is to begin with HGSHS:A, which allows subjects to familiarize themselves with hypnotic procedures, and also provides a first approximation of their hypnotizability. Then, high-scoring subjects can be invited to return for a final assessment with SHSS:C. The Stanford group developed the Stanford Profile Scales of Hypnotic Susceptibility, Forms I and II (SPSHS:I and II), to permit more fine-grained assessments of hypnotizability, particularly with respect to different patterns of ability within the high range (E. R. Hilgard *et al.*, 1963; Weitzenhoffer and Hilgard, 1963, 1967; for a review, see McConkey and Barnier, 2004), but these never entered into common use. Instead, SHSS:C can be ‘tailored’ for special assessment purposes, without losing its value as a standard psychometric instrument (Hilgard *et al.*, 1979).

Nowhere else in psychology, except perhaps in neuropsychology, is so much effort devoted to subject screening and selection prior to formal experimental research. In this respect, hypnosis may serve as a model for individual differences research throughout psychology. Unfortunately, the sheer economics of such a rigorous assessment scheme naturally provides an incentive for investigators to take shortcuts. One of these is a group-administered version of SHSS:C, the Waterloo–Stanford Group Scale of Hypnotic Susceptibility: Form C (WSGC; K. S. Bowers, 1993)—which, while offering some of the same economies as HGSHS:A, eliminates the individual administration that permits detailed inquiry into the subject's experience. Another trend, more disturbing, is reliance on HGSHS:A as the sole screening instrument for hypnosis research. The problem is that HGSHS:A does not contain enough difficult and cognitive items to provide a good assessment of hypnotic abilities; as a result, its ability to identify 'hypnotic virtuosos' is relatively poor (Register and Kihlstrom, 1986). In this respect, SHSS:C remains the 'gold standard' of hypnotizability measures.

Another unfortunate trend is the proliferation of alternative scales to measure hypnotizability, including the Barber Suggestibility Scale (BBS; Barber, 1965), Carleton University Responsiveness to Suggestion Scale (CURSS; Spanos *et al.*, 1983a), Creative Imagination Scale (CIS; Wilson and Barber, 1978) and Hypnotic Induction Profile (HIP; Spiegel, 1972; Orne *et al.*, 1979). When different laboratories use different scales to measure hypnotizability, the virtues of standardization are lost, and it becomes all the more difficult for one laboratory to replicate and extend another's work. Some of the newer scales are shorter than HGSHS:A and SHSS:C, and thus arguably more economical to use, but abbreviation comes at the expense of content validity. The CURSS does include assessments of subjective experience and experienced involuntariness, but these can easily be added to the Stanford and Harvard scales without compromising their essential properties (P. Bowers, 1982; Register and Kihlstrom, 1986).

As valuable as the standardized scales have been for research purposes, it is sadly the case that hypnotizability is rarely measured in the clinic.

It is not clear why this is the case. Some clinicians, especially those working in the tradition of Milton H. Erickson, may discount the importance of individual differences in hypnotizability (Frankel, 1985). They may fear that a finding of low hypnotizability will reduce a patient's motivation for treatment, but the scant evidence available suggests that this is not the case (Frankel *et al.*, 1979). It would seem obvious that candidates for hypnotherapy, or for hypnosis as an adjunctive treatment, should be screened to determine whether they are, in fact, hypnotizable. While it is true that such assessment takes time, clinicians often take time to administer other instruments, such as the Rorschach and the Thematic Apperception Test, that are less relevant to treatment. In any event, the Stanford group developed a set of abbreviated scales that afford valid assessment of hypnotizability in clinical contexts (A. H. Morgan and Hilgard, 1978–1979a,b). These should be more widely used in clinical research and practice than they seem to be.

Can anyone become a hypnotic virtuoso? Hull thought of hypnosis as a habit phenomenon, but, while practice may help subjects become hypnotized more readily, it does not seem to make them more hypnotizable. We now think of hypnotizability as a cognitive skill, and we generally think of skills as things that can be acquired, refined and perfected through experience. Nevertheless, attempts to modify hypnotizability have mostly produced ambiguous results (Diamond, 1974, 1977a,b, 1982; Perry, 1977). More recently, a package known as the Carleton Skills Training Program (CTSP) has been proposed as a means for enhancing hypnotizability (Gorassini and Spanos, 1986; Gorassini *et al.*, 1991; Gorassini, 2004). Here, too, however, the enhancement of hypnotizability appears to be heavily laced with demands for overt behavioral compliance (Bates *et al.*, 1988; Bates and Brigham, 1990; Bates and Kraft, 1991; Bates, 1992). Although this point has been vigorously debated by advocates of the CSTP (e.g. Spanos *et al.*, 1989–1990; Gorassini, 2004), few if any laboratories have abandoned subject selection based on formal measurements of hypnotizability, such as HGSHS:A and SHSS:C, in favor of creating virtuoso subjects wholesale out of unselected subjects with the CSTP.

The phrase *classic instance* can refer to *depth* of hypnosis as well as to hypnotic ability. In the nineteenth century, Braid attempted to characterize the various stages of hypnotic *sleep*, Charcot described catalepsy, lethargy and somnambulism as representing three *stages of hypnosis*, and both Liebeault and Bernheim offered criteria for diagnosing the various stages of hypnosis (for a review, see E. R. Hilgard, 1965). Indeed, some of the very first scales of hypnotizability were actually labeled as scales of hypnotic depth (Friedlander and Sarbin, 1938; LeCron, 1953). However, modern scales of hypnotic depth have usually been offered as supplements to, rather than substitutes for, the assessments of hypnotic ability provided by the conventional standardized scales (e.g. Tart, 1970). Perhaps the simplest measure of hypnotic depth is a 1–10 rating of ‘how deeply hypnotized’ subjects feel themselves to be (O’Connell, 1964; Register and Kihlstrom, 1986).

Such global depth ratings, based on purely subjective (and probably idiosyncratic) criteria, are likely to reflect little more than the subject’s involvement with the hypnotic procedure, and are to be taken with a grain of salt. However depth is measured, there is a definite conceptual difference between depth and ability. Presumably, highly hypnotizable subjects can experience ‘lighter’ or ‘deeper’ stages of hypnosis, in much the same way that a virtuoso pianist can play more or less well, depending on the circumstances. Someone who lacks the ability to play the piano, however, can never play really well. Insusceptible subjects, on this model, lack the ability to become deeply hypnotized, no matter how hard they try. The classic instance, the prototype or defining example of the domain of hypnosis, is a hypnotizable person who is deeply hypnotized.

2.10. Subjective conviction

Subjective experience lies at the heart of hypnosis. It is not interesting that a hypnotized subject will lower his outstretched arm when told that it is becoming heavy. What is interesting is that the arm actually begins to *feel* heavy. It is the subject’s conviction that the suggested event is really happening that distinguishes a genuine hypnotic experience from overt

behavioral compliance. This point was made early on in a series of studies of Barber’s ‘task motivation’ paradigm of hypnosis, which puts very strong pressure on subjects for overt behavioral compliance with suggestions (Barber, 1969, 1972). In one study, Barber and Calverley (1964) reported that subjects in a task motivation control condition gave reports of the ‘reality’ of suggested hallucinations that were comparable with those given by hypnotic subjects. K. S. Bowers (1967) replicated this finding, but found that the reality ratings of task motivation subjects returned to baseline levels following demands for honesty in reporting. Next, Spanos and Barber (1968) confirmed this finding, but found that the hallucination ratings of hypnotic subjects were not corrected by honesty demands. Finally, K. S. Bowers and Gilmore (1969) found that honesty ratings corrected the hallucination reports of simulating, but not real, hypnotic subjects. The entire cycle of research just summarized underscores the importance of subjective conviction in distinguishing what is hypnosis from what is not and who is genuinely hypnotized from who is not.

Orne’s real–simulator design also provides a means to this end. The real–simulator paradigm was intended, largely, to serve as a means to verify the ecological validity of laboratory experiments on hypnosis and other phenomena (Orne, 1959, 1962, 1969, 1970, 1972, 1973). But because Orne’s hypnosis research was part of a larger interest in the objective study of subjective states, including sleep and the detection of deception, the real–simulator design was also a vehicle for careful post-experimental inquiry into subjects’ private experiences of hypnosis. Similarly, the Experiential Analysis Technique was developed as a means for systematically inquiring into subjects’ (retrospective) impressions of hypnotic procedures and their response to them (Sheehan *et al.*, 1978; Sheehan and McConkey, 1982; McConkey and Barnier, 2004). Both procedures have their place in hypnosis research, but they—especially the real–simulator design—can also be expensive to implement.

Although the Stanford-type hypnotizability scales were deliberately constructed with behavioral as opposed to subjective measures of response, assessments of subjective experience

can be easily added to them. For example, subjects can simply be asked whether each suggestion succeeded in producing its intended effect (Register and Kihlstrom, 1986). One comparative study found that ratings of subjective experience corrected the behavioral scores of the BSS strongly downward, but had significantly less effect on scores of the SHSS:A (Ruch *et al.*, 1974). Perhaps the correlations between subjective experience and objective response are high on the Stanford-type scales because the scales themselves put so much emphasis on subjective experience, despite their behavioral scoring. Still, direct assessment of subjective experience makes the point that subjective experience lies at the heart of the domain of hypnosis, and that behavioral responses flow from subjective conviction.

Of course, the subjective experience of hypnosis can go beyond subjective conviction in the suggested effects (Sheehan and McConkey, 1982; McConkey and Barnier, 2004). Following in the tradition of nineteenth-century descriptions of the *depth* or *stages* of hypnosis, a number of modern investigators have proposed that the subjective experience of hypnosis can be assessed along a number of different dimensions. For example, Shor (1962) proposed that hypnotic depth be evaluated along three conceptually independent dimensions: the loss of the generalized reality orientation (Shor, 1959); nonconscious involvement; and archaic involvement. Later, he suggested five additional dimensions on which the phenomenal experience of hypnosis should be assessed (Shor, 1979; Kihlstrom *et al.*, 1989): drowsiness; physical and mental relaxation; mental imagery; absorption in the ongoing experience; and access to normally unconscious ideas and memories. Along the same lines, Field (Field, 1965; Field and Palmer, 1969; Kihlstrom *et al.*, 1989) and Pekala (Pekala *et al.*, 1985; Pekala and Kumar, 2000; Pekala, 2002) have developed questionnaire techniques for assessing a number of subjective experiences thought to be associated with hypnosis.

To some extent, these proposals obviously reflect their originators' theoretical preconceptions concerning the nature of hypnosis. As such, they risk constituting a kind of Procrustean bed into which subjects' experience of hypnosis

must be fit at all costs. For example, we now know that hypnosis need not be relaxing, and hypnotized subjects need not be drowsy (Vingoe, 1968; Banyai and Hilgard, 1976; Malott and Goldstein, 1981; Alarcon *et al.*, 1999). Whether subjects are relaxed or active, alert or drowsy, what really belongs in the domain of hypnosis is subjective conviction in the experiences that are suggested to them. As Sutcliffe (1960, 1961) put it, the hypnotized subject is, in some sense, deluded about the actual stimulus state of affairs.

2.11. Experienced involuntariness

Whether subjects are relaxed or active, alert or drowsy, another element in the subjective experience of hypnosis is the experience of involuntariness in response to hypnotic suggestions. The outstretched arm does not just *feel* heavy: it appears to become heavier *all by itself*, without the subject deliberately constructing the image. The experience of involuntariness is part and parcel of subjective conviction: one cannot believe that one's arm has become light, being pulled up by helium balloons, if one is deliberately imagining that it is so, or voluntarily raising the limb. The experience of involuntariness is what distinguishes a suggestion from an instruction (Weitzenhoffer, 1974, 1980); nonconscious involvement (Shor, 1959, 1962, 1979) is also what distinguishes hypnotic experience from mere behavioral compliance.

In view of the centrality to hypnosis of the experience of involuntariness, it is somewhat surprising that it is so seldom considered in the assessment of hypnotizability. Both HGSHS:A and SHSS:C rely exclusively on observed or self-reported behavioral response, as does the BSS. This general failure to include an inquiry into the experience of involuntariness was criticized by Weitzenhoffer (1980a) himself, as part of his analysis of the *classic suggestion effect* (Weitzenhoffer, 1974). Following the argument of Bernheim (1886/1889, p. 125), who asserted that 'The most striking feature of a hypnotized subject is his automatism', Weitzenhoffer asserted that only involuntary responses to suggestion should count as truly hypnotic in

nature (see also Weitzenhoffer, 1980). Thus, at least in principle, assessments of hypnotizability that do not assess involuntariness may be contaminated by mere behavioral compliance. In reply, E. R. Hilgard (1981) argued that the vast majority of subjects experience their response to hypnotic suggestions as involuntary, so that the degree of contamination may not be great.

Of course, the degree of such contamination is an empirical question. K. S. Bowers (1981), examining response to an abbreviated version of SHSS:A, found that 80 percent of passed items were experienced as involuntary behaviors, and only 20 percent as voluntary. Moreover, subjects who experienced their response as involuntary scored higher on SHSS:A, and on a subsequent SHSS:C, than those who did not, regardless of whether they passed the item according to the behavioral criterion. Subsequent studies of scales of the Stanford type also found low rates of voluntary response (P. Bowers, 1982; Farthing *et al.*, 1983; P. Bowers *et al.*, 1988). Such studies indicate that most positive responses to hypnotic suggestions are, in fact, associated with the experience of involuntariness.

Still, the fact that *some* positive behavioral responses are experienced as voluntary suggests that ratings of experienced involuntariness can be of value in the assessment of hypnotizability—a point with which E. R. Hilgard (1981) concurred. For example, in the normative study of the CURSS, which includes subjective and involuntariness scores as well as the usual objective score, requiring subjects to pass both the objective criterion *and* rate the response as at least moderately involuntary, cut the mean score in half and shifted the distribution of scores dramatically to the left (Spanos *et al.*, 1983*a,b,c*). While such findings suggest that the CURSS behavioral scores might be heavily contaminated with compliance, Spanos and his colleagues have argued that contamination extends to the Stanford scales as well (Spanos *et al.*, 1986*a,b*). However, this was clearly not the case in the studies of Kenneth and Patricia Bowers, or in Hilgard's own studies, where honesty demands and involuntariness ratings had little effect on SHSS scores.

Although the published versions of the Harvard and Stanford scales do not contain assessments of experienced involuntariness,

these are easily inserted into the procedure. Again, perhaps the simplest procedure is a rating scale, with opposite poles labeled 'Deliberate, Effortful, Voluntary' and 'Automatic, Effortless, Involuntary' (P. Bowers, 1982). However, ratings in the midrange of a continuous dimension of involuntariness remain somewhat ambiguous. While the meanings of high and low ratings on such a scale are fairly clear, intermediate ratings might mean that the subject's response was perceived as partially voluntary and partially involuntary; or a response that began voluntarily might have continued involuntarily. Accordingly, P. Bowers *et al.* (1988) introduced a categorical rating system, which allowed for such alternatives as well as the more extreme alternatives of deliberate versus involuntary responding to suggestion.

It is one thing to assess the experience of involuntariness; it is quite another to explain it. Early authorities, such as Bernheim (1886/1889), really seem to have believed that the hypnotic subject was some sort of automaton. Similarly, Arnold's (1946) theory of ideomotor action held that behavioral responses to hypnotic suggestions occurred automatically whenever the subject vividly imagined some suggested state of affairs.

Beginning in the mid-1970s, cognitive psychologists began to elaborate a technical concept of automaticity, couched in the framework of limited-capacity models of attention and information processing (LaBerge and Samuels, 1974; Posner and Snyder, 1975; Schneider and Shiffrin, 1977). According to this view, automatic processes share four characteristics in common: (1) they are inevitably evoked by the presence of certain stimuli in the environment; (2) once evoked, they are incorrigibly executed, in a ballistic fashion; (3) they are effortless, in the sense that they do not consume cognitive resources; and (4) they are processed in parallel, so that they do not interfere with other ongoing cognitive processes. So defined, automatic processes are involuntary in the same way that reflexes and instincts are involuntary.

Based on this technical definition, however, it appears that hypnotic experiences are not involuntary after all (Lynn *et al.*, 1990). For example, response to post-hypnotic suggestion is sensitive to the context in which the cue is presented (Spanos *et al.*, 1987); even highly

hypnotizable subjects can resist hypnotic suggestions (E. R. Hilgard, 1963); and execution of a post-hypnotic suggestion consumes cognitive capacity, so that post-hypnotic responses can interfere with other resource-demanding processes (Hoyt, 1990). Accordingly, many modern theories of hypnosis incline toward the view that hypnotic experiences are not actually automatic in nature, even though they may be experienced as involuntary. In E. R. Hilgard's (1977) neodissociation theory of divided consciousness, for example, automatic processes running in parallel serve to illustrate the idea of divided consciousness. But the theory itself suggests that the experience of involuntariness occurs because the cognitive module that executes the suggestion does so outside of phenomenal awareness (Kihlstrom, 1992a, 1998).

As another example, Spanos's (1986a) social-cognitive view of hypnosis explains the experience of involuntariness in terms of self-deception on the part of the subject, who mistakenly attributes his or her response to external rather than internal factors—a mistake encouraged by various features of the social situation in which hypnosis takes place. In both Hilgard's and Spanos's theories, the experience of involuntariness has some of the qualities of an illusion—although for Hilgard the source of the illusion is to be found in the communications among cognitive subsystems, while for Spanos the source is to be found in the structure of suggestions and other features of the social milieu. It should be noted, in passing, that Spanos has elsewhere suggested that reports of involuntariness stem from subjects' strategic attempts to create an impression that they are deeply hypnotized (Spanos *et al.*, 1985). In this view, the experience of involuntariness is no such thing.

In stark contrast, some modern approaches seem to hold that hypnotic experiences actually occur automatically. For example, Woody and Bowers (1994; see also Woody and Sadler, 1998) drew on neuropsychological theories to suggest that hypnosis alters the functioning of executive control systems associated with the prefrontal cortex, with the result that hypnotic responses are truly involuntary even if they are not technically automatic (see also Haggard *et al.*, 2003). And, somewhat paradoxically, Kirsch and Lynn (Kirsch and Lynn, 1998b,c, 1999; Kirsch, 2001)

have revived Arnold's theory of ideomotor responding, suggesting that hypnotic experiences are an automatic consequence of positive response expectancies. It will take some time to sort all of this out, but at present it appears that the theoretical battleground in hypnosis has shifted, from explaining response to hypnotic suggestions in general, and debating the mechanisms of various hypnotic suggestions in particular, to accounting for subjects' experience of involuntariness in response to hypnotic suggestions.

2.12. Altered state of consciousness

Over the years, much ink has been spilled over whether, and in what respects, hypnosis represents an altered state of consciousness (Ludwig and Levine, 1965; Chaves, 1968; Spanos, 1970, 1986b, 1987a,b; Spanos and Chaves, 1970; Barber, 1972; Sarbin and Coe, 1972; E. R. Hilgard, 1973a,b, 1992; Blum, 1978; Kihlstrom, 1992a, 2007; Sarbin, 1992; Kirsch and Lynn, 1998c; Oakley, 1999a, 1999b; Kallio and Revensuo, 2000, 2003). Sometimes the debate has been couched in terms of the validity of *trance* or *special-process* theories of hypnosis. Sometimes it has been framed as a conflict between alternative paradigms for the investigation of the phenomenon. Sometimes, it seems to be a local manifestation of a broader conflict over whether *mentalistic entities* such as consciousness have any place in a scientific explanation of behavior.

Nevertheless, the conclusion that hypnosis reflects an altered state of consciousness seems unavoidable (Kihlstrom, 2005). After all, consciousness has two principal aspects (Kihlstrom, 1984): *monitoring* ourselves and our environment, so that objects, events and our internal mental states are accurately represented in phenomenal awareness; and *controlling* ourselves and the environment, through the voluntary initiation and termination of thought and action. And hypnosis alters both of them: hypnotized subjects see things that are not there, and fail to see things that *are* there; they fail to remember things that they just experienced, and they remember things that didn't happen; they

cannot control their bodily movements, and they execute post-hypnotic suggestions without knowing why they are doing so. From this point of view, it would seem that the only way to deny that the phenomena of hypnosis reflect alterations in consciousness would be to deny that the phenomena themselves are genuine—to assert, for example, that hypnotic subjects really do feel pain, and really do remember, despite what they say after they have been given suggestions for analgesia and amnesia.

Perhaps, though, the problem lies in the way that *altered state* is defined. If we believe that every state of consciousness is associated with some unique physiological signature, much as sleep is associated with the absence of alpha activity in the electroencephalogram (EEG) and dreaming with the occurrence of rapid eye movements (REM), then the lack of a physiological indicator for hypnosis may be taken as evidence that hypnosis is not an altered state of consciousness after all. But of course, this puts the cart before the horse. Physiological indices are validated against self-reports, as when Aserinsky and Kleitman (1953) awakened their subjects up during periods of REM and non-REM sleep to ask them if they were dreaming. For this reason, physiological variables have no privileged status over introspective self-reports as indices of consciousness.

Arguably, it would be useful if states of consciousness had distinct physiological correlates. But our present knowledge of mind–body relationships is simply not sufficient to make such correlates a necessary part of the definition. After all, cognitive neuroscience has made very little progress in the search for the neural correlates of ordinary waking consciousness (Metzinger, 2000; Coltheart, 2006a,b). It is very difficult to infer from a particular pattern of brain activity just what the subject is doing (Poldrack, 2006). How far in the future do the neural correlates of altered states of consciousness, such as hypnosis, await? And even when they become available, how reliably will we be able to determine that subjects have been hypnotized, just by examining their brains?

Even at the psychological level of analysis, it may not be possible to find any unique cognitive or behavioral change associated with hypnosis. Hull (1933) thought that the hallmark of

hypnosis was hypersuggestibility; but while hypnosis may—may—enhance suggestibility, at the very least it is clear that suggestibility is something that also occurs in the normal waking state (Weitzenhoffer and Sjuberg, 1961; Braffman and Kirsch, 1999; Kirsch and Braffman, 2001). More recently, Orne (1959) suggested that hypnosis was characterized by *trance logic*, which he described (informally, to colleagues; but, alas, never in print) as a kind of ‘peaceful co-existence between illusion and reality’. For example, Orne reported that some hypnotized subjects, hallucinating a companion, saw through their hallucination to the back of the chair on which they sat; or they also saw the real person, sitting nearby; simulators, Orne reported, never did these things. Everyone who has ever worked with a hypnotized subject has observed *trance logic*; but the implication that *trance logic* was unique to hypnosis—its ‘essence’—was vigorously challenged by R. F. Q. Johnson (1972; for a critique, see E. R. Hilgard, 1972; for a rejoinder, see R. F. Q. Johnson *et al.*, 1972). Later studies employing a battery of test items confirmed that hypnotizable subjects were more likely to display *trance logic* than insusceptible subjects (e.g. Peters, 1973; Obstoj and Sheehan, 1977; Perry and Walsh, 1978), but it also became clear that *trance logic* was observed in other situations as well, such as nonhypnotic imagination (McConkey *et al.*, 1991).

Despite the human species’ deep epistemic desire to carve nature at its joints, and slot different states of consciousness into discrete categories, in the final analysis it may be best to treat hypnosis and other altered states of consciousness as *natural concepts*, represented by a prototype or one or more exemplars, each consisting of features that are only probabilistically associated with category membership, with no clear boundaries between one altered state and another, or between altered and normal consciousness (E. R. Hilgard, 1969; Kihlstrom, 1984, 2005). And because we cannot have direct knowledge of other minds, altered states of consciousness must also remain *hypothetical constructs*, inferred from a network of relationships among variables that are directly observable (Garner *et al.*, 1956; Campbell and Fiske, 1959; Stoyva and Kamiya, 1968), much in the manner of a psychiatric diagnosis (Orne, 1977). From this point

of view, the diagnosis of an altered state of consciousness can be made with confidence to the extent that there is convergence among four kinds of variables: an induction procedure; alterations in subjective experience; associated changes in overt behavior; and physiological correlates.

Operationally, an altered state of consciousness can be defined, in part, by the means employed to induce it—or, alternatively, as the output resulting from a particular input (Barber, 1969). Operational definitions of this sort are a residue of functional behaviorism in psychology, but the role of an induction procedure in hypnosis remains open. Certainly an induction procedure helps to define the situation as hypnosis, as opposed to something else, so that the subject has some sense of what to expect and what to do. But it is not sufficient to produce hypnosis: the subject must also be hypnotizable—and then there is the nontrivial fact that any effect elicited while the subject is hypnotized can also be elicited outside hypnosis, by means of post-hypnotic suggestion. And an induction procedure may not be necessary either: highly hypnotizable subjects may not benefit much from an induction, and highly experienced subjects may not need the ministrations of the hypnotist in order to enter hypnosis.

In contrast, introspective self-reports of changes in subjective experience would seem to be central to the definition of any altered state of consciousness. After all, the domain of hypnosis is defined by suggested changes in perception, memory and the voluntary control of behavior—analgesia, amnesia, the experience of involuntariness, and the like. If the hypnotist gives a suggestion—for example, that there is an object in the subject's outstretched hand, getting heavier and heavier—and the subject experiences nothing of the sort, it is hard to say that he or she has been hypnotized.

Of course, self-reports have always made psychologists nervous, even in the heyday of introspectionism (Boring, 1953; Robbins, 2004). Accordingly, another residue of behaviorism is a methodological choice to focus on overt behavior. If a subject hallucinates an object in his outstretched hand, and feels it grow heavier and heavier, eventually his arm ought to drop down to his side. Note, however, that overt behavior is

a consequence of the subject's altered subjective experience, and is of no interest in the absence of corresponding subjective experience. There is really no getting away from self-reports; the methodological trick is to collect them under circumstances where subjects believe it is legitimate for them to reflect accurately on their experiences.

Because both self-reports and overt behaviors are under voluntary control, and thus subject to distortion by social influence processes, hypnosis researchers have long been interested in psychophysiological indices of response. Over the years, a number of such indices have been offered, including galvanic skin conductance (O'Connell and Orne, 1968), EEG alpha (R. A. Dumas, 1977) and theta (Crawford and Gruzelier, 1992) activity, and increased activation of both right (MacLeod-Morgan and Lack, 1982) and left (Maquet *et al.*, 1999) cerebral hemispheres, but these have often proved to be artifacts of confounding variables such as relaxation, or otherwise not intrinsic to hypnosis. The ambiguities and controversies surrounding hypnosis were not resolved by psychophysiology, and they are unlikely to be resolved by neuroscience.

Because subjects can have a wide variety of experiences while they are hypnotized, it was probably a mistake to expect that there would be any neurophysiological correlates of hypnosis in general, following an induction procedure but in the absence of any specific suggestions. Investigators who are interested in the neural correlates of hypnosis are more likely to find something interesting when they focus on the correlates of specific hypnotic suggestions—as in brain imaging work that shows specific changes in brain activity corresponding to hypnotic auditory (Szechtman *et al.*, 1998) and visual (Kosslyn *et al.*, 2000) hallucinations, analgesia (Rainville *et al.*, 2002) or agnosia (Raz *et al.*, 2005). Note, however, in these cases, the brain signature associated with the hypnotic effect was not unique to hypnosis. In the Kosslyn *et al.* (2000) study, for example, hypnotized subjects received a suggestion to perceive a grayscale stimulus as colored, and a colored stimulus in grayscale. A positive response to these suggestions was associated with changes in the 'color area' of the occipital cortex, but these

changes were the same as those observed when nonhypnotized control subjects perceived colored or grayscale stimuli, or when they simply *imagined* the stimuli as such. The brain changed with the experience, but the origins of the experience—whether in stimulation, hypnotic suggestion or vivid imagination—did not much matter.

Setting aside the issue of how altered states of consciousness can be defined in general, how can we characterize the alterations in consciousness observed in hypnosis? The clearest answer is that the core phenomena of hypnosis—the ones that really matter, and that distinguish the domain of hypnosis from that of other forms of suggestibility—entail a division in consciousness affecting percepts, memories and other mental contents that are normally accessible to conscious awareness and are instead processed subconsciously (E. R. Hilgard, 1977; Kihlstrom, 1984, 1992a, 1998, 2007; K. S. Bowers and Davidson, 1991). In post-hypnotic amnesia, the phenomenon that gave hypnosis its name, explicit memory or conscious recollection is impaired, but priming and other expressions of implicit or unconscious memory (Schacter, 1987) are spared. Post-hypnotic suggestion can likewise be construed as a failure of conscious prospective memory (Einstein and McDaniel, 1990; Graf and Utzl, 2001; Zimmer *et al.*, 2001); the post-hypnotic response is, in this view, an implicit expression of memory for the post-hypnotic suggestion itself. Analgesia suggestions disrupt explicit perception (Kihlstrom *et al.*, 1992) of the pain stimulus, but leave implicit expressions of pain, such as psychophysiological responses, intact. Hilgard's 'hidden observer' is a metaphor for the continuing subconscious representation of the pain stimulus. Dissociations between explicit and implicit memory, and between explicit and implicit perception are not a unique signature of hypnosis: they are also observed elsewhere, in a wide variety of normal and pathological conditions. But they do appear to be the signature of the kind of alteration in consciousness that occurs within the domain of hypnosis.

2.13. Social interaction

At the very least, hypnosis entails a dyadic relationship between two individuals, the subject

and the hypnotist; in the case of self-hypnosis, one person takes on both social roles. Then there is the situation in which hypnosis takes place, including the physical environment (laboratory, clinic), as well as the whole socio-cultural matrix that surrounds the transaction—Mesmer, the Svengali myth, stage hypnosis, Saturday-morning cartoons, *The Manchurian Candidate*, the listings of hypnotists in the telephone directory, advertisements in the newspapers and other media, and all the rest. Hypnosis is linked in the popular mind with persuasion, compliance and other aspects of social influence, including subliminal influence—a link that can reach mythological proportions. A recent Google search on the terms *Hitler* and *hypnotist* yielded 48 000 hits, including 'The George W. Bush Hypnosis File'. And not just in the popular mind: George Estabrooks, a leading authority on hypnosis before its current revival, said of Hitler: 'We can, I think, make out a very convincing case that basically Hitler's emotional domination of the crowd ... was only the attack of the stage hypnotist one step removed' (Estabrooks, 1943/1957, pp. 120–121). But we do not have to go as far as Estabrooks to acknowledge that hypnosis provides much grist for the social-psychological mill.

This was true even before there was a social psychology. The Franklin Commission's studies of the role of imagination in mesmerism are recognized today as the first experiments in psychology (Kihlstrom, 2002). In his chapter on hypnosis in 'Principles of Psychology', James (1890/1980) underscored the role of the subject's expectations and the hypnotist's skill in developing rapport, and suggested that 'the bodily symptoms of the Salpetriere patients, which Charcot attributed to neurological changes, were 'all of them results of expectation and training' (p. 1198). Suggestion, as exemplified by hypnosis, was one of the 'simple and sovereign' concepts (the others were sympathy and imitation) by which pre-experimental social psychologists sought to explain interpersonal behavior (Allport, 1954). Ross's 1908 textbook, the first to have 'social psychology' in its title, attempted to explain all social behavior in terms of suggestion and imitation—terms which he used interchangeably (Ross, 1908). McDougall's text, following only a few months later, offered a more extensive set of principles, but suggestion and submission still played a large role in his

approach (McDougall, 1908). Both made extensive references to the literature on hypnosis, especially the work of the Nancy School of Liebeault and Bernheim (Gauld, 1992).

A fully fledged social-psychological approach to hypnosis had to wait until after the Second World War, when the emergence of social psychology as an experimental discipline coincided with a revival of research interest in hypnosis. Interestingly, Sarbin's (1954) role theory, intended as a general theoretical framework for understanding social behavior, found its most popular application in hypnosis (Sarbin, 1950; Sarbin and Andersen, 1967; Sarbin and Coe, 1972; Coe and Sarbin, 1991). Unfortunately, the theory's reliance on a *dramaturgical metaphor* for behavior led some to conclude that hypnosis was somehow akin to faking. Sarbin and his associates repeatedly disavowed this interpretation—although, to be fair, the theory's reliance on a definition of role-playing as *as-if* behavior certainly encouraged the idea that hypnotized subjects weren't analgesic, amnesic, and so on—they were only behaving *as if* they were. Still, with such concepts as *role perception, role enactment, role location, self-role congruence, role expectations, role skills, role demands, role preparation* and *the audience*, role theory certainly offered a rich vocabulary for the analysis of the interpersonal aspects of hypnosis.

Role theory emerged from a sociological social psychology, which emphasizes explanatory concepts (such as role) that reside in the institutional, societal and cultural context of individual behavior, and that rejects mentalistic constructs. As their labels indicate, two other social-psychological approaches are more explicitly allied with the cognitive traditions in psychological social psychology, which place considerable weight on the individual's internal beliefs, attitudes and explanations. Spanos's *socio-cognitive* perspective (Spanos, 1991) began as a revision of Barber's (1969) task-motivational approach to hypnosis, which emphasized the role of attitudes and expectancies, as well as the subject's willingness to think and imagine with the themes of suggestions (Barber *et al.*, 1974).

Spanos's theory then spent time as a 'cognitive-behavioral perspective' (Spanos and Chaves, 1989*a,b*) and as a 'social-psychological interpretation' (Spanos, 1986*a*). In its final form, Spanos's

'socio-cognitive' theory described hypnosis as a strategic enactment shaped by the subject's understanding of task demands, as negotiated with the hypnotist, in the context of specific historical circumstances. For example, Spanos argued that reports of experienced involuntariness were in part misattributions shaped by the structure of the suggestions administered to subjects (Spanos and DeGroh, 1983), as well as a strategy for subjects to present themselves as deeply hypnotized (Spanos *et al.*, 1985). These elaborations of role theory, coupled with a debunking tendency (e.g. Spanos *et al.*, 1982), also left the impression that hypnotic subjects were engaged in something akin to faking.

Despite the similarity in names, a rather different perspective on hypnosis is found in the 'social cognitive' approach to hypnosis offered by Lynn, Kirsch and their colleagues (Kirsch, 1991; Lynn and Rhue, 1991; Kirsch and Lynn, 1995, 1998*b,c*)—sometimes with a hyphen, sometimes without. Partly rooted in Rotter's (1954) cognitive-social learning theory of personality, the theory emphasizes the importance of response expectancies as determinants of both behavior and experience (Kirsch, 1985; Kirsch and Council, 1989). The antecedent expectancies are shaped by the usual sorts of interpersonal processes, including all the sorts of interpersonal influence that social psychologists study. But once these expectancies are formed, their causal effect on hypnotic responding is mediated by a process of ideomotor action very similar to that described by Arnold (1946). In this social-cognitive model, social processes shape expectancies and other cognitions; and response expectancies generate responses by a mechanism similar to the self-fulfilling prophecy (Merton, 1948) and other expectancy-confirmation processes (Snyder and Swann, 1978; Darley and Fazio, 1980; Snyder, 1984; Jones, 1986).

The difference between Kirsch and Lynn's social-cognitive approach and Spanos's socio-cognitive approach can be seen in the analysis of experienced involuntariness. Expectancies, shaped by suggestions and other aspects of the social context function like ideas; and the idea of an action leads automatically to its execution. Thus, involuntariness is neither a misattribution nor an element of strategic self-presentation;

instead, it is a subjectively convincing phenomenal experience that follows from the mechanism that links suggestions to responses. Hypnosis is simply a more general case of these basic phenomena of suggestion and ideomotor action (Braffman and Kirsch, 1999; Kirsch and Braffman, 2001). As another contrast with Spanos's position, Kirsch and Lynn, while assuming an appropriate stance of scientific skepticism concerning various claims about hypnosis, apparently feel no need to engage in a program of debunking. Hypnotic effects can be accepted as reflecting genuine subjective experiences, even if these effects are to be attributed to suggestion, not to hypnosis *per se* (Raz *et al.*, 2006).

Still, the social-cognitive approach to hypnosis shares some undesirable features with contemporary work in social cognition, and indeed social psychology generally—which is, frankly, that it is not very social (Carlson, 1984). For all the talk about social-psychological approaches to hypnosis, relatively little experimental work has been devoted to core topics in social psychology. What is the relationship between attitudes towards hypnosis and hypnotic behavior (McConkey, 1986; Capafons *et al.*, 2004)? What actually transpires between the hypnotist and the subject (Sheehan, 1971a; McConkey and Sheehan, 1976, 1980, 1982; Baker and Levitt, 1989)? How do hypnosis and other forms of suggestibility relate to susceptibility to other forms of social influence (Moore, 1964; Orne and Evans, 1965; Evans, 1967)? How do individual subjects influence each other in group hypnosis, such as the HGSHS:A? (Evans and Mitchell, 1986)? What cognates of hypnosis can be found in non-Western cultures (Mischel and Mischel, 1958; Kirmayer, 1992)? Consider hypnosis as something that happens between two people, and then scan the table of contents of any introductory survey of social psychology: we have only scratched the surface of the domain of hypnosis.

2.14. Two ways in hypnosis and a third way

Actually, this is true for both aspects of hypnosis—the alterations of consciousness and the social interactions. As hypnosis enters the

twenty-first century, we are reminded that, as Hull prepared the monograph summarizing his research program, he also left the field detailed descriptions of 102—not 100, nor 101, but 102—hypnosis experiments that had not been done, and which were, in his view, well worth doing (Hull, 1993a,b) and some 40 studies of waking suggestibility as well (Hull, 1929). Most of these experiments remain undone, and most of these remain well worth doing. And how much more remains to be done, given that we know so much more about both mental processes and social interactions!

For most of its recent history, the social-psychological approach to hypnosis has defined itself in opposition to those approaches that focused on alterations of consciousness occurring in hypnosis (Ludwig and Levine, 1965; Chaves, 1968; Spanos, 1970, 1986b, 1987a,b; Spanos and Chaves, 1970; Barber, 1972; Sarbin and Coe, 1972; E. R. Hilgard, 1973a,b, 1992; Blum, 1978; Kihlstrom, 1992a, 2007; Sarbin, 1992; Kirsch and Lynn, 1995, 1998a,b,c; Kirsch and Lynn, 1998c; Oakley, 1999a,b; Kallio and Revensuo, 2000, 2003). The result has been to give the literature on hypnosis some of the features of a zero-sum game, in which evidence for the involvement of some social-psychological process, such as variations in the wording of suggestions, is taken as evidence against the involvement of some cognitive process, such as divided consciousness (e.g. Spanos and Hewitt, 1980; Laurence *et al.*, 1983; Spanos, 1983; Green *et al.*, 2005b,c; Kihlstrom and Barnier, 2005). But it does not necessarily follow that, because interpersonal processes shape hypnosis, hypnosis cannot also involve an alteration in consciousness.

There is a third way, and it has been available to us from the beginning. William James, considering the competing claims of the Salpetriere and Nancy schools concerning the nature of hypnosis, concluded that *'The suggestion-theory may therefore be approved as correct, provided we grant the trance-state as its prerequisite'* (James, 1890/1980, p. 1201, italics original). Fifty years later, at the dawn of the modern era of hypnosis research, R. W. White asserted that *'The theory of hypnotism will never prosper until, outgrowing the dialectic dichotomy of "striving" and*

“state”, it considers the possibility of interaction’ (White, 1941, p. 502). Martin T. Orne (1959), White’s protégé as both an undergraduate and a graduate student at Harvard, famously tried to distinguish between artifact and essence of hypnosis (Orne, 1959), but a careful reading of his work makes it clear that the demand characteristics that *surround* hypnosis are as important as any ‘trance logic’ that might arise *within* hypnosis.

R. E. Shor, writing in the first edition of this volume, noted that ‘The fundamental problem in hypnosis research is that it is faced with two dangers, which, like the rock and whirlpool of Scylla and Charybdis, are so situated that they must be encountered together, as if they are one’ (Shor, 1972, p. 15). Shor thought that the problem was that of simultaneously ‘maintaining both the disciplined skepticism of the scientist and the confident persuasiveness of the hypnotist’ (p. 15). Today, we can rephrase the problem as follows: that of simultaneously maintaining an interest in the cognitive processes by which consciousness is divided in hypnosis, and an interest in the social context in which hypnosis takes place. Tracing the history of hypnosis in four stages from Mesmer to Hull, Shor asked: ‘How well have modern investigators learned to sail between Scylla and Charybdis? To what extent will modern viewpoints be seen through time as true advances—perhaps to a fifth stage of sophistication—and to what extent merely as changes to culturally more acceptable misnomers and disguised returns to old mistakes?’ (1972, p. 40).

Shor did not know the answer then, and the answer is not clear even now. But it is clear what we *should* do, which is abandon the stance of *either-or* and adopt a new stance of *both-and*. This ‘third way’ in hypnosis research construes hypnosis simultaneously as both a state of (sometimes) profound cognitive change, involving basic mechanisms of cognition and consciousness, *and* as a social interaction, in which hypnotist and subject come together for a specific purpose within a wider socio-cultural context. To get beyond the misnomers and mistakes of the past, hypnosis researchers must have a vision as large as the phenomenon they seek to study. And the domain of hypnosis is very large indeed.

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CHAPTER 3

Generations and landscapes of hypnosis: questions we've asked, questions we should ask

Kevin M. McConkey

3.1. Introduction: the essence of hypnosis

For more than 220 years, researchers and practitioners have strived to understand the essence of hypnosis from the vantage point of scientific theory and method. The essential nature of hypnosis still fascinates and eludes. This volume sets out the key issues, activities and directions for experimental and clinical hypnosis as the twenty-first century lets go of the twentieth century and the researchers and practitioners in the field of hypnosis define the field in fresh ways. In his chapter, John Kihlstrom surveyed the state of knowledge about the fundamental parameters of the domain of hypnosis, and argued the need to step back from the either-or interpretations of hypnotic process and phenomena that have dominated the field in the second half of the twentieth century, and the need to step forward to a new 'third way' of hypnosis research if we are genuinely to progress the field. In this chapter, I first explore some of the reasons why the field has evolved in modern times in the way

that it has, and I consider when and why our field has asked particular questions about hypnosis to generate its theoretical and empirical knowledge base. I argue that what we have asked, as well as how we have answered, has been influenced by people and places at particular times. As an Australian, and as a product of a strong Australian tradition of and legacy to experimental and clinical hypnosis, I will illustrate this influence of generations of researchers and the landscape of the field with Australian examples. Following this, I survey the landscape of our field, and suggest some of the next generation of questions that we need to be asking as well as some of the methods that we should be using. I also point to some yardsticks for the next generation of theoretical and empirical contributions to the field, including those described in other chapters in this volume.

Before turning to the questions, generations and landscapes of hypnosis, we first must be clear about the phenomena of interest, and Kihlstrom (Chapter 2, this volume) has elegantly set out the domain of hypnosis and discussed various issues of concept and definition

(see also Killeen and Nash, 2003; McConkey, 2005–06; Green *et al.*, 2005; Nash, 2005). From my perspective, most contemporary thinking about hypnosis can be traced to the insights of Robert White of Harvard University, who worked in the field in the 1930s and 1940s. White (1937), for instance, noted that the hypnotic setting contains various paradoxes if the communications of the hypnotist are taken literally. When the hypnotist says, for instance, that subjects are getting sleepier and sleepier, the hypnotist does not mean this in a literal sense. Similarly, when the hypnotist says that subjects are now 5 years of age, or can see nothing, or can remember nothing, the hypnotist does not mean this literally. Rather, the hypnotist is asking the subject to experience at a phenomenal level the state of affairs that would occur if his/her communications were correct in a literal sense. The hypnotist is conveying his/her wish, and the subject must interpret these wishes in a way that makes sense and then behave accordingly. Thus, individuals' interpretations of the communications of the hypnotist rather than the words themselves shape the responses that occur in the hypnotic setting. One truism that we too often forget is that it is what people hear, rather than what others say, that matters. A related truism in hypnosis is that it is the ability of the individual, rather than the 'power of the hypnotist', that leads to the hypnotic response. Unfortunately, some in our field, as well as many in the 'lay hypnosis' field, too often forget this truism.

White (1937) also pointed to the importance of understanding how an individual's own expectations and wishes influence and determine the hypnotic responses that occur. In this respect, he considered that the relationship between the hypnotized person and the hypnotist was a key element. He spoke, for instance, in the language of the time of the 'pleasure of obedience' in which, at least for a period of their interaction, carrying out the wishes of the hypnotist becomes the overriding goal of the subject. Moreover, he argued that hypnotized individuals bring 'natures predisposed' to interpret and respond to the communications of the hypnotist in a way that is consistent with their role. In this sense, hypnotized persons process information on the basis of an inherent ability and a preparedness to respond in a particular way,

and this allows them to make sense of the communications of the hypnotist.

A few years later, White (1941) placed greater emphasis on the social psychology of the interaction between the hypnotized individual and the hypnotist. He argued that 'hypnotic behavior is meaningful, goal-directed striving, its most general goal being to behave like a hypnotized person as this is continuously defined by the operator and understood by the subject' (p. 483). The notion that goal-directed striving is central to the responses of hypnotized subjects underscores that both the subject and the hypnotist are in a 'hypnotic setting'—a setting that is unusual in many respects—for a particular reason. This reason is for the individual to experience phenomenal events and to display behavior that he or she may not experience and display in a nonhypnotic setting. For White (1941), the fact that 'mere words' from the hypnotist could initiate a variety of profound changes in the experience and behavior of individuals was an intriguing state of affairs.

Twenty years later, two influential Australian psychologists and contributors to the field, A. Gordon Hammer and J. Philip Sutcliffe, focused on what they believed to be the distinctive essence of hypnosis. Writing in 1961 and later in an *Encyclopedia Britannica* entry in 1974 with Martin Orne, Hammer argued that:

Hypnosis ... is a collaborative enterprise in which the inner experience of the subject can be dramatically altered (Orne and Hammer, 1974, p. 138; see also Hammer, 1961).

Writing in 1961, Sutcliffe argued that:

the distinguishing feature of hypnosis appears to be the subjective state; and the main feature of this state is the hypnotized subject's emotional conviction that the world is as suggested by the hypnotist, rather than a pseudoperception of the suggested world (Sutcliffe, 1961, p. 200).

So, for White, Hammer and Sutcliffe, to understand hypnosis one needed to understand: the relationship between the hypnotist and the subject; the subject's interpretation of the hypnotist's communications in that situation; the abilities, expectancies and strivings of the hypnotized person that influenced their response to those communications; and, perhaps most

importantly, the mechanism by which ‘mere words’ lead to convincing alterations in experience (see Kihlstrom, Chapter 2, this volume). As we will see in the next section, the asking and answering of these questions about hypnosis has depended on the people and places, the generations and landscapes, of the field of hypnosis over the past 50 years.

3.2. Hypnosis in the twentieth century

Hypnosis can be said to have many dates of birth, with some of the common ones being in the times of the ancient temples of Aesculapius (Ellenberger, 1970; Gauld, 1992), the times of Johann Joseph Gassner (Peter, 2005) and Franz Anton Mesmer (McConkey and Perry, 1985, 2002; Pattie, 1990, 1994), and the times of James Braid (Gauld, 1992). Setting aside the many births, and many parents, of hypnosis, the twentieth century was largely dominated by the development of a scientific approach to its investigation, and this approach can be best understood through a comment on people and places.

3.2.1. The ‘big five labs’, and hypnosis in Australia

From the earliest years of scientific research into hypnosis, our field has been shaped by particularly productive individuals and their engaged research laboratories. For instance, in the early decades of the twentieth century, experimental hypnosis research at Harvard University by Morton Prince, P. C. Young, Henry Murray and Robert White motivated other programs, including George Estabrook’s at Colgate University, Milton Erickson’s at Worcester State Hospital and Clark Hull’s at the University of Wisconsin, interestingly which he could not transfer to Yale University, the place of his major contributions to psychology. This culture of major experimental programs led to the establishment of the ‘big five’ laboratories in the middle of the twentieth century. These were the laboratories of: E. R. and J. R. Hilgard at Stanford University, M. T. and E. C. Orne at Harvard University and later the University of Pennsylvania, T. X. Barber at the Medfield

Foundation, T. R. Sarbin at the University of California, Berkeley, and A. G. Hammer and J. P. Sutcliffe at the University of Sydney. These five laboratories generated an explosion of interest and activity in hypnosis in the second half of the twentieth century. The leading personalities from these labs and their research programs shaped the field of hypnosis in the last half of the twentieth century. Arguably, although most of them are deceased, they shape it still today via the transmission of concepts, methods and values to continuing generations of hypnosis researchers. Many of today’s leading researchers in our field can trace their intellectual lineage to one or more of these laboratories, and some can trace their lineage to even earlier Titans of psychology.

In Australia, the birth of hypnosis can be traced directly to a graduate seminar taught by Gordon Hammer at the University of Sydney in 1954. Australian hypnosis research developed in the mid-1950s to mid-1960s when two major groups of researchers formed at that university, one around Hammer and the other around Sutcliffe, both of whom had also been influenced by the work of Hans Eysenck in the 1950s. Hammer was the supervisor of Sutcliffe’s 1958 doctoral thesis which led to two very influential articles in which he introduced and developed a distinction between credulous and skeptical approaches to hypnotic phenomena (Sutcliffe, 1960, 1961). Sutcliffe (1960) stated that ‘what might be called the “credulous” view takes the hypnotic subject’s testimony on faith’ and ‘the “skeptical” view [is held by] those who doubt the subject’s testimony and contend that he actually perceives the situation as it is while acting as if it were suggested by the hypnotist’ (p. 73). Sutcliffe’s distinction introduced a more sophisticated vocabulary and empirical approach to the old question of whether hypnotic phenomena are ‘real’. Sutcliffe believed strongly that, although they are mistaken, hypnotized individuals are convinced that their hypnotic experiences are indeed real. As importantly, Sutcliffe’s work together with Hammer’s work set the conceptual and methodological stage for at least three generations of Australian researchers who followed.

Hammer and Sutcliffe supervised a number of graduate students at the University of Sydney

in the early 1960s—including Fred Evans, Campbell Perry and Peter Sheehan. Although Sutcliffe moved away from hypnosis research to concentrate on more general issues in psychology (see Sutcliffe, 1996), Evans, Perry and Sheehan continued in the field, and either moved to or spent time in North America, and trained their own students. Campbell Perry established an influential laboratory at Concordia University, where he trained another generation including Jean-Roch Laurence (see Laurence *et al.*, Chapter 9, this volume) and Robert Nadon (e.g. Nadon, 1997). Meanwhile, Peter Sheehan returned to Australia after time in North America to establish a hypnosis laboratory at the University of Queensland, where he trained a number of his own students, including myself—a third-generation Australian hypnosis researcher. In turn, at Macquarie University and then at the University of New South Wales in Australia, I supervised a fourth generation of researchers including Amanda Barnier and Richard Bryant (see their chapters in this volume; for more discussion of the students and successors of Hammer and Sutcliffe, see Sheehan, 1985). As Barnier and Bryant train the fifth generation of Australian hypnosis researchers, it is worthwhile reflecting on the intellectual influences of Hammer and Sutcliffe. For instance, it is interesting to see the conceptual similarities in some of the writings of Hammer (e.g. Hammer, 1961) and of Barnier (e.g. Barnier, 2002) on post-hypnotic suggestion. Although separated by over 40 years, their writings reflect the transmission of a particular sensibility and a particular approach to hypnosis research across generations.

3.2.2. Generations of questions and methods

Indeed, the questions asked, the methods used and the inferences made from empirical work over the last 50 years reflect strong interdependence within and between laboratories. Since the rise of the big five laboratories 50–60 years ago, certain questions or obsessions, as well as personalities, have gripped the field. These ‘hot topics’ and the rise and fall of interest in hypnosis across the twentieth century were influenced by social and historical events, as well as by

particular people, theories, methods and findings, both inside and outside the field.

Barnier and McConkey (2003) identified some of the major topics, people and findings of various periods as follows:

1. William James and the Twentieth Century Hypnotists: Hypnosis at the Turn of the Century (James, 1890; Kihlstrom and McConkey, 1990).
2. Clark Hull and the Twentieth Century Experimentalists: Hypnosis in the First Half of the Twentieth Century (Hull, 1930–31*a,b*, 1933; White, 1937, 1941).
3. The Measurement Imperative: Hypnosis in the 1950s (Hilgard, 1965*a*; Sheehan and McConkey, 1982; Balthazard and Woody, 1985).
4. Hypnotic Control and the Manchurian Candidate: Hypnosis in the 1960s (Watkins, 1947; Barber, 1961; Orne, 1961, 1972*a*; Orne and Evans, 1965).
5. The Hidden Observer and the Theory Wars: Hypnosis in the 1970s (Hilgard, 1973*a,b*, 1974, 1975, 1979; see also Barber, 1979; Spanos, 1986).
6. The Correlates of Hypnotizability: Hypnosis in the 1970s (Bowers, 1974; Hilgard, 1965*a*; see Laurence *et al.*, Chapter 9, this volume).
7. Forensic Hypnosis, Eyewitness Memory and Hypnotic Coercion: Hypnosis in the 1980s (Orne, 1979; Perry 1979; Laurence and Perry, 1983, 1988).
8. Repressed Memory, Memory Wars, and the Battering of Hypnosis: Hypnosis in the 1990s (Orne *et al.*, 1984; Schefflin and Shapiro, 1989; McConkey and Sheehan, 1995; Lynn and McConkey, 1998).

In the context of all of this, individual researchers also follow a personal journey that is shaped by, and sometimes shapes, the field. For instance, over 30 years ago I conducted my first piece of hypnosis research, which formed the basis for my undergraduate honours thesis in psychology at the University of Queensland in Australia (McConkey, 1975; McConkey and Sheehan, 1976). In that research, I examined the effect of very different styles of interpersonal orientation of the hypnotist on the responses of

high and low hypnotizable subjects on a range of test items. In an application of the real-simulating paradigm (Orne, 1959, 1972*b*), I allocated the highs and lows to the 'real' and 'simulating' conditions, respectively, and, as the hypnotist, I interacted with them in ways that were either 'collaborative' or 'contractual'. The collaborative context used a structured process of mutual self-disclosure to promote a much friendlier and more open communication between the subject and the hypnotist than would typically occur in the more traditional, or contractual, laboratory context of the time. I was interested in the effect of these different styles of interpersonal orientation on subjects' attitudes to the hypnotic setting and on their patterns of response to the test items. I found that the context of testing had an appreciable effect on subjects' attitudes, but relatively little effect on their performance on the test items. The real, high hypnotizable individuals were much more likely to engage in open dialog with the hypnotist in the collaborative setting than were the simulating, low hypnotizable ones. The real, hypnotized individuals who were tested in the collaborative, rather than the contractual, context reported very positive feelings for the setting overall, for the hypnotist as a person and for their experience of hypnosis. Notably, however, they did not perform any differently in an objective sense across the range of test items.

I mention this early contribution to the literature to make the point that hypnosis research is a product of its place and time and of the people involved. One prominent theoretical issue within the field then was the nature and influence of the social relationship between the subject and the hypnotist. In the late 1960s and early 1970s, a number of researchers were investigating the impact of the status, sensitivity, warmth, familiarity, competence and experience of the hypnotist, albeit with mixed results (e.g. Greenberg and Land, 1971; Hedberg, 1974). This work was consistent with debates taking place within psychology, and outside the field of hypnosis, at that time. In psychology, some were arguing that psychological research should adopt a more humanistic approach and that a personalized laboratory setting would change and improve our understanding of various psychological phenomena and processes.

Also at that time, research was focusing on the role of self-disclosure in the development of warm and trusting social relationships (e.g. Jourard, 1968; Argyris, 1975). So, my first piece of hypnosis research, with its collaborative approach and self-disclosure techniques, can be situated within the generations and landscapes of hypnosis and psychology of the mid-1970s; one might say of this research, and of much hypnosis research, that it was on the cutting edge, as well as a product of its time.

In the same way, a decade or so later, throughout much of the 1980s and 1990s, ambitious hypnosis researchers in Australia and indeed throughout most of the world were working on the topic of hypnosis and memory. This interest in the interaction of hypnosis and memory was not new (see, for instance, Laurence and Perry's, 1988, historical review of hypnosis and memory in the legal setting), but it was particularly fervent in the 1980s and 1990s as research on hypnosis intersected with research on eyewitness memory, coercion, clinical disorders of forgetting, and repression (e.g. McConkey and Sheehan, 1995; Lynn and McConkey, 1998).

Methods in hypnosis research are also a product of their place, their time and the people involved. One major methodology in the field when I conducted my first hypnosis research was the real-simulating model, which had been developed by Orne (1959, 1972*b*). Orne's simulating technique simply determines whether the behavior of hypnotized individuals can be accounted for on the basis of their perceptions of the demand characteristics of the experimental setting. Given that Peter Sheehan was supervising my honours thesis, that he had worked with Orne in the 1960s and that he had written extensively about the simulating technique (e.g. Sheehan, 1971; Sheehan and Perry, 1976), it was essentially predetermined that my first piece of research was going to use that model. This is a nice example of the influence of the landscape of the field of hypnosis, and the influence of the direct and personal transmission across generations of researchers—from Orne, to Sheehan, to me—of the understanding and application of the real-simulating model.

Sometimes, methodological advances, and the asking and answering of old or new questions, had to wait for the development of

new technologies. A good case in point is the Experiential Analysis Technique (EAT), a technique that Peter Sheehan and I developed in the late 1970s and early 1980s (Sheehan and McConkey, 1982). This technique came about, in part, because of the widespread availability of reliable videotape technology at that time. The EAT asks the subject to watch a videotape of their hypnosis session in the presence of an independent experimenter and then to comment on their subjective experience. Although the development of this method of inquiry was motivated by a particular, interactionist model of hypnosis, rather than by the technology itself, the availability of the technology enabled the EAT to be used relatively easily, cheaply and widely. A more recent example of the impact of new technology is the ‘dial method’, a technique that I developed with Amanda Barnier and others in the early 1990s, which took advantage of improvements in computing hardware and software. The dial method involves subjects turning a dial at the same time that they are experiencing a hypnotic suggestion to indicate the strength, the reality, or whatever, of their experience of that hypnotic suggestion (e.g. McConkey *et al.*, 1999b). In general, the findings from research that has used the EAT and the dial method have highlighted theoretically important processes of experience as well as performance aspects of behavior that were not being captured by existing methods. The development and use of these techniques allowed us as experimenters to hear the voices of the hypnotized individuals in new ways and to map the multiple pathways to their experience, and I will comment in more detail on some of this research in a moment. Of course, the development and availability of the tools and techniques of neuroscience are exerting an enormous influence across many disciplines at the moment, and the potential of these tools and techniques is being explored in our field of hypnosis (see Cox and Bryant, Chapter 12; Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume).

3.2.3. Selected investigations of hypnosis, from an Australian laboratory

To illustrate in more detail the influence of generations and landscapes—of people, place and

time—on questions and methods, let me turn again to research on hypnosis in Australia. From the very beginning of serious theorizing and research on hypnosis in Australia (see Evans and Burrows, 1998), Australians have focused strongly on the methodology and experimental design aspects of the study of hypnosis. In this sense, the methodological emphasis has been consistent with that of Australian psychology generally (e.g. Sheehan and Perry, 1976; Sheehan and McConkey, 1982; Sheehan, 1989, 1998). As noted earlier, Sutcliffe’s (1960, 1961) distinction between credulous and skeptical approaches to understanding hypnosis became a major stimulus for debate in the literature of the time, and the distinction is still relevant today. Sutcliffe (1961; see also Sutcliffe, 1996) pointed out that ‘methodological weaknesses render equivocal much of the available, clinical and experimental evidence on these issues.... [He said that] Evidence alleged to support the credulous view can be shown to be consistent with the skeptical view, and most points at issue remain unresolved’ (p. 190). He proposed methodologically rigorous ways in which to analyze experience, by attempting to validate it against objectively defined patterns of behavior, both simulated and unsimulated (Sheehan and Perry, 1976; see also Cox and Bryant, Chapter 12, this volume).

The legacies of Sutcliffe and of Hammer in their writings and in their influences on Australian researchers as well as on our field in general can be captured in terms of a focus on understanding the experience of the hypnotized subject and on ensuring that understanding is derived from experimentation that involves clear problem statement, meticulous design and precise inference. Interestingly, the spirit of critical inquiry that they engendered (or, more correctly, demanded) in the Australian approach to hypnosis research is consistent with the classic approach of the famous 1784 report into mesmerism by the Royal Commission established by Louis XVI and presided over by Benjamin Franklin (see McConkey and Perry, 1985, 2002; Perry and McConkey, 2002). This demanding characteristic of the Australian approach to hypnosis is consistent with the emphasis at the University of Sydney at that time on an appreciation of the historical basis of

a field, a commitment to a close integration of theory and methodology, and a relative lack of concern for practical relevance (O'Neil, 1987). This approach was very different from that which could be seen in North American laboratories at the time, and it was for these reasons, among others, that influential researchers such as Martin Orne were attracted to spend time at the University of Sydney in the early 1960s (Sheehan, 1985).

In this next section, I illustrate some of the distinctive questions and methods of Australian hypnosis research by selectively describing work on internally and externally generated experience, tracking experience, testing the limits of hypnotic experience and testing the limits of post-hypnotic experience.

3.2.3.1. Internally and externally generated experience

Many individuals seem capable of creating private events, such as images, that they describe as being similar to actual percepts in the sense of having qualities such as vividness, detail and dimensionality. In normal circumstances, most of us do not confuse our private experience with an actual, externally based experience even though we may feel and say that the two are very similar. In circumstances such as hypnosis, however, some people seem to confuse their internally generated images with their externally based experiences. In the case of a visual image, for instance, during hypnosis the image may take on a quality of compelling and realistic externality.

Orne and McConkey (1981) considered how to determine whether an internally constructed experience takes on the quality of being externally based in response to hypnotic suggestions. We developed a procedure that asked subjects to compare their experiences of hypnotic suggestions with their experience of a 'suggestion' that was generated externally but that subjects believed to be solely the result of a hypnotic suggestion. We gave hypnotized individuals a series of suggestions such as 'Your arm is floating upwards', 'Your arm is stiff and rigid', 'The metal ball you are holding is becoming hot' and 'You are lying on the beach and feeling the warmth of the sun'. These were presented as routine suggestions. Inside the metal ball, however, we had placed chemicals and water that generated

an exothermic chemical reaction and that made the ball warm. Because the hypnotist handled the ball normally and gave no indication of the physical reality of the suggested heat, we considered that subjects would think that the alterations in the temperature of the ball were internally generated in much the same way as their arms being stiff and rigid, and being at the beach feeling the warmth of the sun.

McConkey and Barnier (2001) used this 'hot ball' paradigm to investigate the way in which hypnotized subjects experienced internally and externally generated events. In one experiment, we tested high hypnotizable subjects in conditions where the ball was normal or heated, and we asked them to rate the hot ball item and the other five hypnotic items on a number of dimensions. Our findings indicated that the ratings were similar across the normal and heated conditions. In other words, the high hypnotizable subjects experienced the suggestion for heat hallucination similarly whether the ball was presented in a normal or a heated condition. In addition to rating their belief in the heat similarly, when they were asked to rank it against the other hypnotic items the high hypnotizable subjects in both conditions ranked it as one of the top three 'real' items, but not necessarily as the most real. The comments in the post-experimental inquiry indicated that none of the subjects considered that the heat was being generated from within the ball and none of them suspected that we had done something to warm the ball; on the contrary, they typically said that their hand was heating the ball.

In another experiment, we replicated and extended the first by testing high and low hypnotizable subjects in either normal or heated conditions and we asked for ratings immediately after the suggestion, and then after an additional 20, 40 and 60 s while the subjects were still holding the metal ball. Our findings indicated that highs gave higher ratings of heat and of belief than did lows, and that the ratings increased over time for highs but not for lows. The post-experimental inquiry comments of highs indicated that they thought the source of the heat they experienced was based on the suggestion of the hypnotist. No high hypnotizable subjects in the heated condition commented about an external heat source; rather, they

considered that the source of the heat was within them, as it were. However, most low hypnotizable subjects in the heated condition commented, for instance, about 'something strange going on' with the ball.

This work on internally and externally generated experience underscores the fusion that can occur between internally and externally generated hypnotic experiences, the equivalent reality values that can be placed on internally and externally generated experiences, and the attributions that subjects make for their experiences. Notably, this experimental work and the inferences drawn from it can be traced through a research lineage to the visit of Martin Orne to the University of Sydney in the early 1960s and to some of his writings during that time, as well as to Sutcliffe's focus on delusion and his call for more sophisticated research designs to understand the subjective experience of hypnosis. Moreover, it highlights the relevance of hypnosis research to the conceptual and methodological challenge of private subjective experience, which has been a matter of debate across psychology since the classic work of Perky (1910).

3.2.3.2. Tracking experience

Assessing the experience of hypnosis has been of theoretical and practical interest throughout the history of the phenomenon (Hull, 1933; Hilgard, 1987), and the importance and difficulty of understanding the essentially private experience of the hypnotized person has been discussed in various ways (see Sheehan and McConkey, 1982; McConkey, 1991). The development of a way of measuring and tracking the experience of hypnosis concurrently with that experience has great appeal, especially since the experience of hypnosis is typically inferred from the limited behavioral response of subjects on standard tests, such as the Stanford Hypnotic Susceptibility Scale, Form C (Weitzenhoffer and Hilgard, 1962). On these tests a suggestion is given, for instance, that the subject's hand and arm are too heavy to hold out in front, and a positive response to that suggestion is scored if the hand and arm lower a certain distance following the suggestion. Although this type of behavioral criterion allows us to determine response in a rough way, and also allows us to separate people into categories such as high,

medium and low hypnotizability, it does not provide very much information about the precise nature of the subjective experience and the relationship of that experience to the communications of the hypnotist and other factors and influences in the test setting (Sheehan and McConkey, 1982; McConkey, 1991).

To index and track ongoing hypnotic experience better, McConkey *et al.* (1999b) developed a 'dial' method of tracking the subjective experience of hypnosis. This method involved asking subjects to turn a dial to indicate changes in the strength of their experience of the hypnotically suggested event. The dial was connected to a computer that recorded the position of the pointer (i.e. rating of experience) every second across the three phases of the item (i.e. suggestion or onset, test and cancellation or offset). These three phases can be illustrated in terms of the standard suggestion of hand lowering: the suggestion or onset phase involves asking the individual to hold his/her hand out and the hypnotist saying that the hand is becoming too heavy to hold out there; the test phase involves the hypnotist telling the subject to see how heavy it is and then observing quietly for, say, 10 s; and, the cancellation or offset phase involves the hypnotist telling the person to put his/her hand back into a resting position and saying that the hand is now back to normal and is no longer heavy.

Most research in the field of hypnosis has focused on the test phase, with only a few investigators, including Gordon Hammer and Ernest Hilgard, being interested in the experience of hypnotized subjects during the onset and offset phases. Consistent with the Australian approach of seeking a more complete understanding of the experience of hypnosis (Sutcliffe, 1960, 1961; Hammer 1961; Sheehan and McConkey, 1982) we were interested in developing and using a methodology that generated a more detailed profile of subjects' experiences across the entire test item. Moreover, for theoretical and practical reasons, we were interested especially in exploring the experience of subjects during the onset and offset of selected hypnotic items.

McConkey *et al.* (1999b) asked high, medium and low hypnotizable subjects to use the dial across three different hypnotic items: arm levitation (an ideomotor item), arm rigidity

(a challenge item) and anosmia (a cognitive item). Hypnotizability follows a normal distribution with about 10–15 percent of individuals being able to experience a wide range of hypnotic suggestions, about 10–15 percent being able to experience very few hypnotic suggestions, and the rest of us being able to experience some, but not other, hypnotic suggestions. Ideomotor suggestions, such as arm levitation (or your arm feeling light and floating up) can be experienced by most people; challenge suggestions, such as arm rigidity (or your arm being too stiff and rigid to bend) is typically not experienced by lows, but is experienced by most mediums and highs; and, cognitive items, such as anosmia (or not being able to smell a distinctive scent such as oil of wintergreen) is typically only experienced by highs. We expected that the continuous nature of recording the strength of subjects' experience would reveal patterns across the types of subjects, types of items and phases of each item.

We found that the subjects showed different patterns of dial ratings across the three hypnotic items. Overall they showed greater experiential involvement in arm rigidity than arm levitation and anosmia. In other words, they showed greater involvement in the challenge item than in the ideomotor or cognitive items. Subjects who passed an item in terms of the behavioral criterion reported a greater strength of experience for that item than did those who did not meet the behavioral criterion. In other words, there was a substantial match between behavior as assessed by the specific criterion and experience as assessed by the dial. Although highs responded behaviorally more so than mediums or lows, the dial pattern of highs and mediums was essentially similar for each of the items and was different from that of lows. The different patterns of dial ratings across the items underscored that hypnotic items tap particular dimensions of hypnotic responding, and these dimensions involve different aspects of experiential engagement as well as different behavioral responses. Our findings suggested that these items do not differ simply in terms of difficulty, but rather in a more complex amalgam of demands that are placed on and experienced by the hypnotized person.

In terms of the pattern of ratings across the phases of the hypnotic items, our findings

indicated that the experience of subjects changed across the phases and that these changes were different for different types of subjects and for different types of items. Whereas during cancellation of arm rigidity, both high and medium hypnotizable subjects showed a decreasing strength of experience, during cancellation of anosmia, highs showed an increasing strength and mediums showed a decreasing strength of experience. It seems that for highs, their positive experience during the test of anosmia enhanced and encouraged the intensity of their experiential involvement and this intensity was not diminished by the explicit instruction from the hypnotist to cancel their experience. In this respect, it was striking that the pattern of dial ratings indicated that across the items the offset of the experience progressed relatively slowly and in a way that was very different from the pattern that characterized the onset of the experience.

In summary, our work on tracking experience, which used a number of hypnotic test items, highlighted the sometimes inconsistent relationship between behavior and experience in hypnosis, the importance of considering the onset and offset phases of hypnotic suggestion as well as the test phase, and the sometimes convergent and sometimes divergent findings across different measures of experience. Notably, the methodological and quantitative focus of this experimental work is consistent with the overall methodological emphasis of Australian psychology (O'Neil, 1987; Sheehan, 1989), and it is distinctive that the only work in North America along the same lines of developing a methodology to track experience was undertaken by Fred Evans (Evans and Orne, 1965) who was trained at the University of Sydney. As Kihlstrom (1999) pointed out, the Australian approach to hypnosis research has often been to develop particular techniques of inquiry or measurement that advance the field, while the rest of the world has been arguing over 'theoretical' issues. Moreover, the work on tracking experience underscores how the point at which we measure a phenomenon or process can substantially influence how we think about it. This has relevance not only in the field of hypnosis but in other fields of psychology as well.

3.2.3.3. Testing the limits of hypnotic experience

One way in which to test the nature and limits of the hypnotic experience is to seek to alter something that is highly personalized and held with conviction. Because of its personal significance, and following the work of Sutcliffe (1961), Noble and McConkey (1995) suggested a change of sex to hypnotic subjects. In the experiment, we used the real-simulating paradigm of Orne (1959). This paradigm involves high hypnotizable subjects who are tested normally and low hypnotizable subjects who are instructed to fake hypnosis; the hypnotist is unaware of who is faking and who is not. The simulation condition is a quasi-control one that allows inferences to be drawn about the extent to which the responses of the high hypnotizable, real subjects may be based in the nexus of cues operating in the experimental setting rather than in the subjective experience of hypnosis (see also Cox and Bryant, Chapter 12, this volume).

The uses of the simulating paradigm and the inferences that can be drawn from it have distinctive links to the Australian approach to hypnosis research. For instance, although the paradigm was introduced by Orne (1959), Sheehan (1971; Sheehan and Perry, 1976) has done more than perhaps any other researcher in the field to explicate the inferences that can and cannot be drawn from its use, and to point to the ways in which its use sometimes helps and sometimes does not help us to understand particular hypnotic phenomena. The real-simulating paradigm is a very demanding one in terms of its practical application in the laboratory (requiring multiple, blind experimenters) and is a very demanding one in terms of its outcomes (most studies do not find strong differences between real and simulating subjects). Thus, those researchers who use it must have a particularly masochistic streak; notably, the paradigm has been used mostly by researchers in Australia or with close links to Australia.

Noble and McConkey (1995) used excellent hypnotic subjects (labeled hypnotic virtuosos by Ernest Hilgard) and high hypnotizable subjects as reals, and low hypnotizable subjects as simulators. We found that a compelling hypnotic experience could be established among

virtuoso subjects in particular. In addition, we challenged subjects' experiences of hypnotic sex change through procedures of contradiction in which a hypothetical authority figure questioned their experience, and confrontation in which they looked at an image of themselves on a video monitor. The experimental technique of creating an experience and then seeking to contradict or challenge that experience occurs consistently in Australian hypnosis research. This technique can be traced intellectually to the views of O'Neil (1987) and Hammer (1961), in particular, about one way in which to test the nature and boundaries of psychological phenomena. We found that virtuosos were more likely to change their names to one consistent with the suggested sex and to give higher ratings of the reality of the sex change experience. Most notably, virtuosos were more likely than highs or simulators to maintain their response when challenged. In particular, these excellent hypnotic subjects appeared willing and able to reinterpret conflicting information in a way that confirmed their suggested experience, and this is consistent with other work on hypnotic blindness (e.g. Bryant and McConkey, 1989; see also Cox and Bryant, Chapter 12, this volume).

In a similar vein, Burn *et al.* (2001) used hypnotic sex change to explore information processing in hypnotic experience. We were interested in the degree to which subjects selectively interpret information that is consistent with their hypnotic experience. We used hypnotic virtuoso and high hypnotizable individuals as reals, and low hypnotizable subjects as simulators. We gave subjects a hypnotic suggestion for sex change and, during that experience, we asked them to listen to a structured story that involved a male and female character; following hypnosis, we asked subjects to recall the story.

We found that a similar number of virtuoso, high hypnotizable and simulating subjects responded to the sex change suggestion; they were equally likely to change their names and to give similar ratings of the reality of the suggested sex and the experience of their actual identity. Our focus, however, was on the responses to the story. After listening to the story involving the male and female character, virtuosos were less likely to identify with the character that was consistent with their suggested sex.

Interestingly, however, when asked to recall the story after hypnosis, the virtuosos recalled more information about the character that was consistent with their suggested sex than did the highs or the simulators. In other words, virtuosos were less likely to identify with the character consistent with their suggested sex, but they recalled significantly more information relevant to that character. Thus, selectivity in information processing seemed to occur during the encoding stage, and character identification alone was not the major factor that influenced the enhanced recall of virtuosos (see also Cox and Bryant, Chapter 12, this volume).

These findings suggest that the processing of information by hypnotic virtuosos involved dimensions other than character identification (see McConkey *et al.*, 2001). In particular, they interpreted certain aspects of the information as more significant to their internal belief. This suggested that different cognitive processes were operating during the development and maintenance of the delusory experience in hypnotic virtuoso subjects. One explanation for these findings is that virtuosos experienced greater ego-involvement in the suggestion than did highs and simulators. Consequently, while listening to the story during the sex change experience, they related to themselves, or self-referenced, the information about the character consistent with their suggested sex, rather than related it to the actual (male or female) character. Indeed, comments by virtuosos indicated that they perceived certain information as self-referential and highly significant in the context of their ongoing sex change experience.

In summary, our work on hypnotic experience underscored the resistance to challenge of hypnotic phenomena among virtuosos, the processing and reinterpretation of information to support hypnotic phenomena and the role of links to the self in establishing and maintaining hypnotic phenomena. In drawing the link of this work to people and place, let me leave to one side the frivolous part of the comment by Kihlstrom (1999) that 'only in Australia' would the focus of a hypnosis experiment be on a suggestion for sex change. Let me agree, however, that the nature of the societal influences in North America probably mean that it would be very unlikely for researchers there to pick up

this paradigm; certainly, a number of North American colleagues have said to me that they could 'never do' that type of research in their laboratories. The influence of place on the type of phenomena that can be investigated in psychology generally and in hypnosis specifically has not been considered in any detail in terms of the impact that it has on our understanding of those phenomena. Moreover, the work on sex change not only gives us insight into the nature of hypnosis, but also offers a way to investigate delusion in the laboratory setting, especially since the transient characteristics of our 'sex-changed' subjects were similar in many ways to the counterfactual beliefs that one sees in clinically deluded individuals (for more on hypnotic delusions, see Cox and Bryant, Chapter 12, this volume).

3.2.3.4. Testing the limits of post-hypnotic experience

Another way to test the nature and limits of hypnosis is through post-hypnotic suggestion. Post-hypnotic suggestion involves instructing a hypnotized person to show certain behavior or have certain experiences after hypnosis. Post-hypnotic behavior is characterized by an apparent lack of awareness of the reason for the response and a reported experience of compulsion to respond (Orne *et al.*, 1968; Sheehan and Orne, 1968; Kihlstrom, 1985). Explanation of this phenomenon has been clouded by scientific neglect and by amazing anecdotes. Historical reports, for instance, tell us of a woman seeing the suggested image of her absent husband for 24 h, a woman seeing the tail of her cat as black rather than spotted for 3 days, and a man seeing a suggested portrait on a visiting card for more than 2 years (for other wonderful historical anecdotes, see Laurence and Perry, 1988; Gauld, 1992).

Barnier and McConkey (1998) focused on post-hypnotic responding away from the experimental setting and the people associated with that setting. We conducted two experiments to investigate the limits of post-hypnotic suggestion. In the first experiment, we gave high hypnotizable individuals a post-hypnotic suggestion or made a social request to mail one postcard every day to the experimenter; the post-hypnotic suggestion either did or did not specify how long this should continue. We gave

the subjects 120 postcards and we contacted them 16 weeks after the hypnosis session and asked them to return for an interview.

We measured how many postcards each person returned overall and the number of cards they returned each week. Our findings indicated that those who were given the social request returned a greater percentage of postcards and responded more consistently than those who were given the post-hypnotic suggestion. There were, however, differences in the experiences reported by individuals given the post-hypnotic suggestion and those given the social request. Most notably, those given the suggestion were more likely to report feeling a sense of compulsion and to characterize their responding as requiring little effort. For instance, some said that the suggestion to mail the postcards had been implanted in their 'sub-conscious', which caused them to send a postcard every day. In contrast, social request subjects generally attributed their responding to a 'contractual' arrangement between themselves and the hypnotist; they were more likely to characterize their responding as planned and effortful.

In a second experiment we conducted a replication and extension of the first. We gave real, hypnotized subjects and simulating, un hypnotized subjects a post-hypnotic suggestion to mail one postcard every day to the experimenter; also, we gave nonhypnotic, control subjects a social request to perform the same task. The post-hypnotic suggestion or request either did or did not specify how long this should continue. We gave each person 100 postcards and we contacted them 8 weeks after the session and asked them to return for an interview. Again, we measured how many postcards each person returned overall and the number of cards they returned each week; we were also interested in the number of cards returned each week by those given the specified duration and unspecified duration suggestion/request. Our findings indicated that real, hypnotized and control subjects returned a higher percentage of postcards than did simulators. Also, those who were given the suggestion or request of specified duration returned a higher percentage than those who were given the unspecified duration version.

Approximately half of the subjects reported that they had a routine for sending the postcards and that they used strategies to help them remember. For example, although some participants experienced an 'automatic trigger' to send the postcards, others had a set daily routine and used strategies such as writing in their diary or placing the postcard in a particular spot to help them recall. For many subjects, family and friends played an important role, whether positive or negative, in their responding. Some of them reported that they were encouraged and assisted, whereas others were ridiculed for responding or were actively discouraged from responding. Moreover, although control subjects responded for as long as hypnotized subjects, the two groups reported quite different experiences. Real, hypnotized subjects were more likely to attribute their responding to a sense of compulsion, whereas control subjects said they responded because they had agreed to do so and they wanted to meet that agreement. Few simulators responded; they said that they either saw no reason to do so or that they simply forgot.

Our findings underscored that although a social request was as effective behaviorally as a post-hypnotic suggestion in eliciting the desired response, the experience underlying that response was quite different. The people who were given the social request typically interpreted the task in terms of a contract between themselves and the hypnotist-experimenter. In contrast, those who were given the post-hypnotic suggestion interpreted the hypnotist's message in more varied and idiosyncratic ways, and they typically reported a compulsive quality to their experience and response. Thus, it could be said that a post-hypnotic suggestion operates at the level of experience rather than behavior. Whereas the behavioral reaction to a post-hypnotic suggestion may be no different in an objective sense from that associated with a social response, the subjective experience is quite different. Moreover, the subjects who responded most to the post-hypnotic suggestion outside the laboratory were those who placed their own personal meaning on the task and who found a substitute for the hypnotist, as it were, in their families, friends or even themselves. These subjects constructed a social setting and engaged in interpersonal

interactions that helped them maintain their suggested experience and behavior. Accordingly, post-hypnotic responding outside the suggestion setting might best be represented in terms of the extent to which individuals enmesh the suggested task within their own social interactions and personal commitments.

In summary, our work on post-hypnotic experience highlighted the behavioral similarity and experiential dissimilarity of responding to a social request and a hypnotic suggestion, the sense of compulsion associated with some but not all post-hypnotic responding and the role of social interactions and influences in enhancing or inhibiting response to a post-hypnotic suggestion away from the hypnotic setting. In reflecting on the relevance of people and place to this research, let me make two points. First, in most of the research in the field of hypnosis stemming from North America and Europe—and very little comes from Asia or elsewhere—there have been virtually no attempts to understand hypnotic phenomena in the context of the everyday life experiences of subjects. In other words, many researchers have set up their experiments as if they were dealing with a distinctive, if not unique, phenomenon that is isolated from other events in the life of subjects. Thus, it is perhaps not surprising that those researchers then tend to argue for the disconnection of hypnotic experience from everyday life.

Secondly, although there have been some attempts to do ‘post-hypnotic postcard’ research in North America, they have been limited and are unpublished. It may be that the nature and expectations of research participants in North American laboratories would not allow this type of research to be conducted meaningfully. I am not saying that our Australian subjects were acquiescent in going along with the research task, but I am saying that the Australian culture perhaps encourages or allows a more engaged involvement than do some other cultures in which the focus is more on individual rather than collective good. Setting aside the inferences about the nature of hypnosis that one can draw from this research, it carries important messages about the power of a simple social request given in a particular social context, something that Orne (1962) highlighted long ago. The relevance of the social interaction between experimenter

and subject and the construction of social support for particular actions can be seen in the behavior of these subjects.

3.3. Generations, landscapes and new questions

The lesson from this brief review of a small portion of history and of selected hypnosis research from Australia is that knowledge, attitudes and skills in a field are transmitted directly and indirectly, not only via its literature, but also via the generations of researchers that come and go. People involve themselves in the field, they leave the field and they leave the world. They influence both the questions that are asked and the methods used to answer them. We can see also that there is always an identifiable landscape of the field that can substantially influence—indeed allow or disallow—the research questions that are asked, the way in which questions are investigated and the way in which findings are interpreted.

3.3.1. Landscapes of the field of hypnosis

Various features can be identified that have defined the landscape of the field in significant ways at various points in time. The single most important feature in the second half of the twentieth century was the standardized measurement of hypnotizability (for a detailed discussion, see Barnier and McConkey, 2004; see also Woody and Barnier, Chapter 10, this volume). This has been the critically defining feature for the field for almost 50 years, especially the scales developed by André Weitzenhoffer and Ernest Hilgard at Stanford University (e.g. Weitzenhoffer and Hilgard, 1959, 1962; Hilgard, 1965*a*). This feature allowed the conduct of scientific research in both experimental and clinical settings by many researchers in many countries on many questions. Although they have served us well, it is time to improve this aspect of the landscape. This is a view that Woody *et al.* (2005) have explored and argued recently (see also Woody, 1997; Woody and Barnier, Chapter 10, this volume). In essence, we need to update and improve the measurement of hypnotizability, which will help to maintain

individual differences in hypnotic ability as a distinctive and defining feature of the landscape of the field (see also Laurence *et al.*, Chapter 9, this volume).

There are at least two other ways to think of landscapes: the landscape of psychology broadly, and the landscape of the general community. The scientific and professional landscape of psychology will influence where hypnosis is located in the reputational order, and the concerns of the general community will shape how psychology and hypnosis are seen and considered. For instance, the understandings and misunderstandings surrounding the nature of human memory have been a dominant feature of psychology throughout its undulating history (e.g. Bartlett, 1932; Lynn and McConkey, 1998; McNally, 2003), as well as being of interest to the general community. The many aspects of this feature have not only shaped a significant part of the work of psychological scientists, but have also influenced the field of hypnosis directly and indirectly. The obsession with hypnosis and memory during the 1980s and 1990s in particular was both a help and a hindrance to our field. It was a help in that it generated a substantial number of important findings, it forced many of us to engage with broader questions in psychology and in the general community, and it exposed many of our scientific and professional methods and findings to other—sometimes unfamiliar and uncomfortable—processes, such as cross-examination in the court of law and close scrutiny in the court of media opinion.

It was a hindrance in that hypnosis found itself taking the blame, as it were, for things that were part of the normal vagaries of memory—rather than specific problems of hypnosis—and it either led to or exacerbated too many personal and political conflicts within our field. Moreover, we will never really know the opportunity cost of so many of us becoming obsessively involved in conducting research on hypnosis and memory. Research on hypnosis and memory continues of course, but we need to be more cautious in the future about getting caught up in transient obsessions that are really an aspect of the landscape of psychology broadly and the general community.

Our field of hypnosis lies not only within disciplines such as psychology, but also within the general community and culture. That general community and culture can exercise substantial influence on how we think about research questions in the field, on whether we can engage public interest when we investigate those questions and on how our answers to those questions are received. Also, how we interact with that general community can influence how people think generally about hypnosis, and whether the members of the public want hypnosis to be part of the clinical procedures that they are offered. As with the other landscapes, one can point to various issues or features that have significantly defined the landscape of the general community and culture over time, and one can point to how those issues or features have influenced the field of hypnosis.

Sex is a defining feature of the broader community and culture, and an ascribed association between hypnosis and sex has been around for a long time. Indeed, over 220 years ago the Commission established by Louis XVI and presided over by Benjamin Franklin not only presented a report that provided an immaculate conception for the scientific analysis of hypnosis (see McConkey and Perry, 1985, 2002; Perry and McConkey, 2002), but also a subset of its members presented a secret report that focused on the moral dangers associated with animal magnetism. This secret report noted that it is always men who magnetized women, that this typically involved touching the neighborhood of the most tender parts of the woman's body and that 'in lively and sensitive women ... the end of the sweetest of emotions, is often a sort of convulsion'. The report noted that a scoundrel could easily exploit such a situation, and that even the most moral of magnetizers may find that he is unable to resist the temptations that are presented by the magnetized woman (see also Sheehan and Perry, 1976; Gauld, 1992; Pattie, 1994).

There is a long-standing view about hypnosis and sex that exists in the general community, and we as a field seem to have done very little to deal with this and other potentially negative and harmful views in terms of research or education. Similar comments can be made about so-called 'stage hypnosis' in live theatres and on television.

Crawford *et al.* (1992), for instance, reported that although most participants in a stage hypnosis show described their experience as benign, others described it in negative terms, as confusing, annoying and frightening. We need to reach out more directly to the general community. For whatever reason—perhaps we think that our research is not strong enough in these areas, or perhaps we think that these are irritating but essentially harmless matters that are not worth worrying about—as a field we seem to turn our eyes away from aspects of the general community and culture’s view about hypnosis. My point is that we should engage more obviously and directly with the landscape of the general community, and we should advance more obviously the positive and sanitize the negative influences and views about hypnosis. We need public intellectualism to be more apparent in our field. The article by Michael Nash (2001) that appeared in *Scientific American* is a nice example of what is needed. Although this type of public engagement is difficult and can be frustrating, it is essential that it be a more obvious part of the twenty-first-century activity in our field.

3.3.2. Asking old questions in new ways: three generations of questions

I have argued that generations of people and landscapes of the field have combined to determine the questions that have been asked about hypnosis in the past. Woody and McConkey (2003) pointed out that as the field of hypnosis matures, people in the field need to identify new generations of research questions more explicitly. We can see this type of maturing in other fields in the discipline of psychology, and we need to be more intentional about this maturing in our own field. For instance, in a discussion of social-psychological research on the attitude–behavior relationship, Zanna and Fazio (1982) long ago identified three generations of research questions. A first-generation question in this area was whether attitudes and behaviors are related. This question led to the second-generation question of when, and under what conditions, they are related. Finally, this question led to the third-generation question of what processes determine and influence the relationship between attitude and behavior.

As a field matures, the nature of questions that lead the field must also change. The new questions not only need to embed and reframe previous questions, but also they need to go beyond them. So what types of questions is our field asking now, and what types should it be asking as it moves to new generations and landscapes?

3.4. Hypnosis in the twenty-first century

In evaluating the field of hypnosis in this first decade of the twenty-first century, there is burgeoning interest and many opportunities, but there are also challenges to be faced. The level of interest and opportunities for hypnosis from outside the field has been steadily increasing in recent years after a period of relative decline and disinterest. For instance, cognitive psychologists and neuroscientists have increasingly looked to hypnosis researchers and hypnotic techniques to assist in asking and answering questions about problems of consciousness, perception and action (see Cox and Bryant, Chapter 12; Barabasz and Barabasz, Chapter 13; Oakley Chapter 14, this volume). This is a nice example of the availability of new methods allowing us the opportunity to answer old questions in new ways and to ask questions that we have not thought of before. In doing so, however, there is a need to be careful about integrating this work with existing work, and a need to ensure that we add more sophisticated and better integrated levels of explanation (Barnier and McConkey, 2003).

There are at least three challenges to be addressed in moving the field forward. The first is that some hypnosis research still focuses on rather sterile and unproductive first-generation questions such as: ‘Is there a special state of hypnosis?’ ‘What is the nature of the trait that makes some people high in hypnotic ability and other people low?’, ‘Are hypnotic subjects just faking or lying?’. For instance, although all thoughtful theorists would agree that hypnotic behavior is not simply faking, Kosslyn *et al.* (2000) framed their otherwise path-breaking neuroimaging study of positive and negative color hallucinations with the question of whether hypnosis ‘is a distinct psychological state ... that allows one ...

to marshal one's resources in unusual ways' or whether it is 'acting, ... simply a role that people can adopt' (p. 1279). Despite concluding from their results that 'hypnosis is not simply role enactment', framing the work in this way shows that first-generation questions (real or faking) can haunt the field of hypnosis long after most thought the theoretical battle was over (Woody and McConkey, 2003). We need to move to more mature questions, and we need to do this in ways that are convincing both inside and outside the field of hypnosis.

Another challenge is that in designing hypnosis research, some investigators cling to 'old ways' of theory testing, which makes it difficult to advance our understanding of hypnosis or to connect to new areas outside the field. Predictions about hypnotic behavior and experience are still sometimes couched in terms of longstanding and outmoded ways of conceptualizing certain issues, where a favored theory is compared against a straw-man (for related discussion of this approach to theory testing, see Kihlstrom, Chapter 2; Laurence *et al.*, Chapter 9, this volume). A better way is to attempt a more nuanced comparison of competing theories of specific underlying processes. The goal of this new generation of hypnosis research would be to examine simultaneously two or more theoretical perspectives that suggest underlying processes for particular hypnotic phenomena under particular conditions. This is difficult to do, but it is at the heart of the interactionist approach (Sheehan and McConkey, 1982), and the third way in hypnosis research described by Kihlstrom (Chapter 2, this volume).

Yet another challenge is that sometimes in the field of hypnosis, questions and methods fall out of alignment. Even though there is an essential view that theory and methods should be strongly linked (Sheehan and Perry, 1976), researchers sometimes use methods and measures that are inconsistent with their theoretical approach or insufficient for their theoretical inferences (e.g. drawing inferences about the cognitive abilities of highs when you only screen them for testing on simple, ideomotor items). Alternatively, researchers sometimes use novel methods and measures (e.g. neuroscience techniques) simply because they can, even though

the methods and measures are disconnected from behavioral and experiential data, absent of appropriate selection procedures and without a clear idea of the underlying processes involved (for a detailed analysis, see Barnier and McConkey, 2003; for a review of current research and practice in this area, see Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume).

And finally, researchers often fail to apply multiple sets of procedures to collect data that will allow convergence and strong inferences. As Sheehan and Perry (1976) noted,

the nature of a problem must ultimately dictate the methods the experimenter should adopt, but there is definite value in the application of multiple sets of procedures when the problem facilitates such an approach—and most investigators ignore this fact (p. 247).

Relatedly, they also noted that the

multiple application of specific paradigms to the same issue is instructive ... it illustrates the potential advantages of convergent inquiry by pointing in illustrative fashion to the kinds of artifact that are necessarily eliminated by such a strategy (p. 248).

Sheehan and Perry (1976) argued strongly and correctly that the use of 'multiple operationism' in which different sets of methods are used to test a notion will lead to stronger inference as a hypothesis survives the confrontation of different methods of testing. We have lost this rigor from aspects of contemporary hypnosis investigation, and we need to regain it if the field is going to maintain an appropriate level of scientific standing. Again, as Sheehan and Perry (1976) noted,

the proponents of the [hypnosis] models argue distinctively for the legitimacy of their procedural applications and their own accounts of hypnotic phenomena. one decided advantage of this is that the domain of hypnotic study can be widened considerably as research reveals new and interesting data which raise further issues to be explored. But one disadvantage in pursuing separateness of approach is that procedural differences become too formally demarcated and theory tends to polarize around particular viewpoints and

strategies of research. Penetrating analysis of phenomena is put at some risk when inquiry focuses only on a limited number of ways in which inferences about data can be checked (p. 254).

Interestingly, as noted above, Kihlstrom (1999) pointed out that the Australian approach to hypnosis research has been almost the reverse: to develop particular techniques of inquiry or measurement that advance the field while the rest of the world has been arguing over ‘theoretical’ issues. Arguing over theory is not bad, of course, but *only* arguing over theory does not advance the field very much.

3.5. Toward a new generation of questions and methods

As we move toward a new generation of questions and methods, there are two areas in particular that demand continued, but innovative, exploration: hypnosis as a state; and the nature of individual differences.

3.5.1. The state of hypnosis

An enduring theme for hypnosis researchers and practitioners has been whether there exists a special, unique state of hypnosis. The idea that we should be looking for some unequivocal indicator of a special or altered state in hypnosis dies hard. Ernest Hilgard sometimes commented that it is a shame that there is not a light on people’s foreheads that comes on to indicate when they are hypnotized. The advent of brain imaging technology seems to offer vastly expanded terrain in which to search for this indicator light—namely, somewhere inside the skull. However, such a search may be an inappropriate perseveration of a first-generation question. Rather, the field needs to replace the search for a static signature of the hypnotic state with a more sophisticated version of the question—in other words, the field needs to stop simply asking is hypnosis a special state or is it not. As Woody and McConkey (2003) suggested, the field needs to adopt the dynamic systems concept of a state, which is a concept that is often used by physicists and other natural scientists. From this perspective, the term ‘system’ denotes the set of related or interacting variables

that characterizes a hypnotized person. Thus, rather than simply continuing to look for a unique signature of the hypnotic state, Woody and McConkey (2003) argued that the field needs to turn to later-generation questions such as: What diversity of states occurs within hypnosis? How can we characterize them in a multivariate way? What are the important patterns of change in these states over time? It is the neural underpinnings of these dynamic states that will be of interest, rather than the discovery of the ‘indicator light’ inside the head (for more on the neural underpinnings of these states, see Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume). In other words, we should study the variety of continuous states that occur within hypnosis, characterizing the dimensions of the state space in a multivariate way and examining the pattern of change in these states across time (see also Laurence *et al.*, Chapter 9, this volume).

This position is consistent with the interactionist theory that I and others have argued in the seemingly endless debate about whether hypnosis is mostly a cognitive or a social phenomenon (see also Kihlstrom, Chapter 2, this volume). Some investigators have argued that hypnosis reflects specific and special cognitive processes and that the focus must be on these processes if we are to understand hypnosis (e.g. Shor, 1959, 1962, 1979; Hilgard, 1973a, 1979). Others have denied the importance of such cognitive processes and have argued that hypnosis can be best understood on the basis of conventional social influence processes (e.g. Spanos and Barber, 1974; Spanos, 1986). On the surface, it would seem difficult to have it both ways. But this isn’t so. The interactionist position considers that hypnosis involves genuine, subjectively compelling alterations in conscious awareness, and that hypnosis is shaped powerfully by the social context in which the hypnotic encounter occurs. From the interactionist perspective, the key issue is to determine and to explain the conditions under which either cognitive or social processes are more influential in determining the experience and behavior of the hypnotized individual.

The interactionist position is not new of course. White’s (1937, 1940) views about hypnosis were essentially interactionist, and before him

William James's (1890) views at the end of the nineteenth century were also essentially interactionist. As Kihlstrom and McConkey (1990) pointed out, behavior inside the context of hypnosis (as well as outside that context) is ultimately the outcome of a reciprocal interaction between internal personal factors and external environmental influences. One major value of the techniques and technologies of neuroscience will be that they can provide another measure of this interaction (Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume). Their informed use will allow us to investigate a new generation of questions about the hypnotic state; of course, we must avoid their uninformed use, which will simply lead to a new phrenology (e.g. see Friston, 2002; Grodzinsky, 2002).

3.5.2. Individual differences

Individual differences exist in the ability of people to experience hypnosis, and it is essential that we understand the basis of those individual differences. Woody and McConkey (2003; see also Woody *et al.*, 2005b; Laurence *et al.*, Chapter 9; Woody and Barnier, Chapter 10, this volume) noted that when thinking about hypnotic responding, we need to adopt a componential approach. This approach considers that different hypnotic responses require different components of underlying abilities, and that for a particular type of response, one or more components may be necessary. However, it is also possible that various alternative combinations of components may be sufficient for the production of the response, thus providing more than one way to produce it. Given that individuals differ in their profile of abilities to enact various specific underlying components, it may be the case that individuals who lack a necessary component cannot produce that response. However, people with different profiles of abilities may possibly produce the same response in different ways. This argument has been tacit in a substantial amount of previous work, but there has been no coherent approach to its investigation. For that to occur, the field needs new methods and models, and some of these have been provided by McConkey, Woody and Barnier (e.g. McConkey and Woody, 2003;

Barnier and McConkey, 2004; McConkey and Barnier, 2004; Woody *et al.*, 2005b; Woody and Barnier, Chapter 10, this volume).

3.5.3. Hypnotic state and individual differences: emergent properties

Woody and McConkey (2003) argued that hypnosis may have emergent properties, and that there may be changes in consciousness during hypnosis (e.g. loss of agency, archaic involvement) that are preconditions for some kinds of hypnotic performance. Related to the notion that component processes can intersect and shape the emergence of hypnotic performance (Woody and Barnier, Chapter 10, this volume), it is important to ask whether some experiences in hypnosis have emergent properties, or properties that are essential to some kinds of hypnotic behavior?

To illustrate the possibility of emergent properties of hypnotic and nonhypnotic components, Woody and McConkey (2003) offered a schematic componential diagram; see Figure 3.1. The squares represent components that are more or less unique or special to hypnosis, whereas the circles represent components that may be involved in some hypnotic responses, but are not unique to it. Thus, the large triangle roughly indicates the domain of components of special relevance to hypnosis (see also Kihlstrom, Chapter 2, this volume). The various groupings of squares and circles indicated by dotted lines show sets of components that may be activated by different hypnotic suggestions. These groupings lead to a number of interesting implications. First, different suggestions may call on somewhat overlapping, but also somewhat different, sets of components. Second, there may be a core underlying component, or components, that all hypnotic suggestions call on; in other words, across different types of suggestions and hypnotic effects, there may be some necessary common component(s). Notably, one possible candidate for this would be the capacity to alter one's sense of agency ('the classic suggestion effect'; for varying accounts of this, see Woody and Sadler, Chapter 4; Lynn *et al.*, Chapter 5; Barnier *et al.*, Chapter 6, this volume; for an analysis of the relationship between suggestibility,

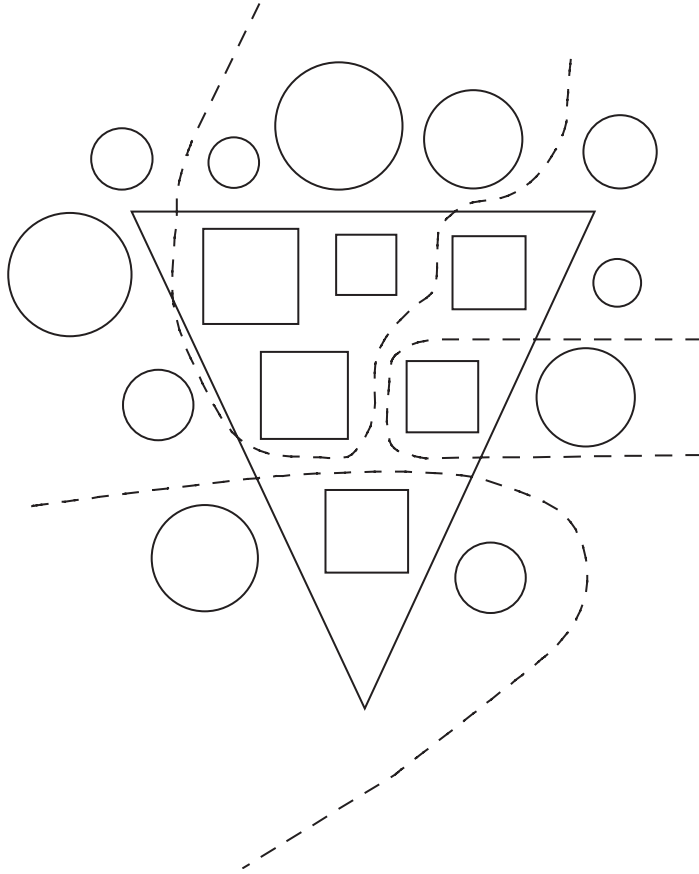


Figure 3.1 A schematic componential diagram of hypnotic and nonhypnotic components. From Woody and McConkey (2003, p. 317). Reproduced with permission of the *International Journal of Clinical and Experimental Hypnosis*.

hypnotic and nonhypnotic, see Tasso and Perez, Chapter 11, this volume). Third, two or more different sets of components may be sufficient to produce a particular hypnotic response, and thus represent alternative ways to respond to particular hypnotic suggestions. In other words, different people (or the same person on two different occasions) may be able to respond to an item via different underlying processes; indeed, this was evident in much of the work of Sheehan and McConkey (1982).

Despite this array of interesting possibilities, to date there has not been a coherent approach to organizing and investigating the issues. As Woody and McConkey (2003) pointed out, the field needs to develop new approaches, conceptual and methodological, to examine new generation

questions, such as: What sets of component abilities are related to which classes of hypnotic behavior? How do these components combine (e.g. necessary versus sufficient sets of conditions)? How are they organized (see also Woody *et al.*, 1992)? Is there a core, common underlying component, or components? If so, is it unique to hypnosis, or shared with some nonhypnotic phenomena? Are there multiple pathways to the same hypnotic response, enacted by different subjects, or even by the same subject on different occasions? How should we distinguish and measure these multiple pathways given the current state of our tools and techniques? As Woody and McConkey (2003) argued, using neuroscience as an example, decomposing hypnotic behavior into its underlying

psychological components is absolutely essential for building a bridge between behavioral function and underlying brain activity. It is also essential to find appropriate equivalence classes—that is, groups of participants who are responding in the same basic way—for neuroimaging studies, which usually require averaging across multiple participants for sufficient power (for similar comments, see Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume).

3.5.4. New generation methods

This component and emergent view is also important for our methods. If we suspect componential and emergent qualities, then we need measures of hypnotic susceptibility that make componential distinctions, especially among those who are highly hypnotizable (see Woody and Barnier, Chapter 10, this volume). If high hypnotizable subjects are the most interesting to us, then differences among these highs are also fascinating (see Laurence *et al.*, Chapter 9, this volume). We need the methods to do justice to their complexity as hypnotized, and sentient, individuals.

To illustrate, consider that the psychometric tradition tells us where we can reasonably expect homogeneity or equivalence: once we have added up the number of suggestions each subject passed, we assume that one person scoring 9 is basically the same as another person scoring 9; i.e. there are not different kinds of 9s. However, most hypnosis researchers do not hold this assumption. First, they sometimes discuss the standardized scales in ways that clearly suggest a componential conceptualization. Second, in addition to pre-testing on general hypnotic susceptibility, researchers often also pre-test on the specific ability of interest in the particular study, whether that is the capacity for amnesia, hallucinations, or whatever. To progress beyond the general fact of individual differences in hypnotic responsiveness, we need to turn to later-generation questions that emerge from a componential perspective.

Woody *et al.* (2005; see also Woody and Barnier, Chapter 10, this volume) recently tried to move the field in this direction by applying full-information factor analysis, which is a sophisticated analytical approach for dichotomous items, to a large data set that we drew from

using the Harvard Group Scale of Hypnotic Susceptibility, Form A (Shor and Orne, 1962) and the Stanford Hypnotic Susceptibility Scale, Form C (Weitzenhoffer and Hilgard, 1962) over many years. Our analysis yielded the four subscales of direct motor, motor challenge, perceptual-cognitive and post-hypnotic amnesia responding, and we argued that these subscales point to the building blocks of hypnotic response. To test this argument, we used these subscales as simultaneous predictors of hypnotic responses across four experiments in order to distinguish the contribution of each specific component from general hypnotizability. This led us to argue that the four different components may arise because the subjective phenomena that underlie them are qualitatively distinct. For example, in hypnotic responses of the perceptual-cognitive type, the crucial subjective experience appears to be one of a feeling of external reality in the face of an inconsistent actual reality; a hallucination is the prototype of this kind of experience. In contrast, the crucial subjective experience in hypnotic responses of the motor challenge type appears to be a feeling of involuntariness or ineffectiveness of one's will; trying to do something but failing is the prototype of this kind of experience. An individual experiencing a hallucination does not have the conviction of involuntariness, nor does an individual who tries to move but cannot move necessarily have the conviction of external reality (Woody *et al.*, 2005).

3.5.5. What else do we need?

A full understanding of hypnosis, whatever it turns out to be, needs to be integrated seamlessly into general psychological principles, and one yardstick of the next generation will be how much and how well the questions, methods and inferences in the field call on general psychological principles and evidence (whether in abnormal psychology, cognitive psychology, social psychology or neuroscience). Another important yardstick will be the degree to which the field moves away from static snapshots to an understanding that hypnotic processes and phenomena unfold across time, since this will bring together issues of individual differences and psychological process. Generally, the time

course of hypnotic responding has not been built productively into hypnosis research (McConkey *et al.*, 1999a; but see discussion of work by Ray and de Pascali on temporal aspects of hypnotic processes in Barabasz and Barabasz, Chapter 13, this volume). As Woody and McConkey (2003) noted, the relevance of time course links closely with a componential view of traits, in that the study of hypnotic phenomena as they unfold across time may illuminate how component abilities combine sequentially, or the different ways they are organized to produce behavior. Likewise, recall that earlier, in discussing the ‘hypnotic state’, we advocated studying the variety of continuous states that occur in hypnosis by examining their patterns of change across time.

Finally, an essential yardstick of the next generation will be how much we can develop convergent understanding of the classic suggestion effect and volition. To do this, we need more subtle distinctions and language. Experiences of ‘nonvolitional’ responding are often confused with the vividness and reality of suggested effects by participants (and sometimes by researchers). Relatedly, a lack of cognitive effort, or ‘effortless experiencing’, is sometimes confused with, but is not necessarily the same thing as, a diminished capacity to exert will or control. As the next generation evolves, there are central questions about changes in sense of agency that include: whether the phenomenon of nonvolition is suggested or unsuggested, or manipulable through suggestions; whether changes in the sense of volition are always or necessarily in the direction of a reduced sense of agency; and whether the sense of involuntariness related to aspects of hypnotic behavior is a precursor of experiencing, a product of behavioral enactment or some sort of reciprocal, bi-directional event that unfolds over time. These are the sorts of questions that will energize a new generation of people and laboratories, and that will transform the field.

3.6. Concluding comments

Laurence (1997) eloquently argued that ‘we should not be afraid to take a position and clearly state that any theory of hypnosis should be based on or substantiated by reliable

scientific evidence. To do so, however, we have to be willing to eliminate from our own theories concepts that have no reason to survive other than their traditional or historical link to hypnosis research’ (p. 287). A couple of years before these comments, Kirsch and Lynn (1995) in their important article in *American Psychologist* said ‘there are broad areas of agreement among all serious hypnosis researchers and theoreticians, as popular myths about hypnosis have been dispelled by research and clinical observation’ (p. 856). Kihlstrom (1997), however, commented ‘it would be a grave mistake for the community of hypnosis researchers to settle on one or another false consensus that obscures differences in approach and sweeps areas of conflict under the rug’ (p. 329).

As Kihlstrom (1992) and others have argued, ‘a satisfactory theoretical account of hypnosis must invoke both social-psychological and cognitive-psychological constructs. Individual investigators may wish to focus their efforts in one direction or another, as their preferences dictate, but the ultimate goal must be a kind of synthesis out of which comprehensive understanding will emerge’ (p. 311). This kind of synthesis can be seen in the Australian approach to hypnosis research, where the hypnotized individual is seen as an active participant who employs appropriate cognitive strategies to resolve the multiple problems posed by the hypnotic setting (Sheehan and McConkey, 1982; McConkey, 1991). Hypnotized individuals develop a commitment to the phenomenal reality of their suggested experience, and they make attributions about their experiences during hypnosis that appear to protect the integrity of their hypnotic responses.

So, to genuinely assist the field in this early part of the twenty-first century, what do we need to do? First, we need to continue to strive for rigorous scientific research in our field. If we do not champion scientific investigation and evidence-based clinical approaches, then there will be a quick backslide down the slope of nonsense inside and outside the field in terms of views, attitudes and uses of hypnosis. Let us not be seduced by the short-term attractions of trite theory and popular therapy. And let us not

mistake the tyranny of the majority as leadership of the field. Coe's (1992) provocative socio-political analysis of hypnosis was correct in the sense that some people have a need to hold onto and to promote the notion that hypnosis is something much more special than it is. Second, we need to move away from doing more of the same in terms of research, and we must try to do some things differently. We need transformational as well as incremental advances in knowledge. This is easier said than done, of course, but we are at a natural point in the evolution of generations and landscapes that provides an opportunity to transform our field in very positive and major ways.

Third, we need to be more adventurous and collaborative in our hypnosis research for the sake of the relevant disciplines and professions as a whole. We need to reach outside the field for inspiration and perspiration, and we need to better ensure that the methods and findings of our field are appreciated and used in our broader disciplines and professions. Fourth, there is a special need in hypnosis with the passing of many of the Titans of the last 50 years of hypnosis research—and with the aging of their immediate successors—to think about how to stimulate, encourage and reward those who are earlier in their careers to engage further in hypnosis research. Ours is a tough field in which to work, and we have to make sure the rewards are worth it.

In the traditions of the volumes that have come before (Shor and Fromm, 1972, 1979; Fromm and Nash, 1992), the chapters in this volume allow us to evaluate the field via the contributions of both established and emerging researchers as they consider the essence, the explanations and the evidence of hypnosis. As we read these contributions, consider the questions they ask and the answers they offer. They are all products of the generations and landscapes that came before, and they are all shaping those that will follow.

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SECTION II

Theoretical perspectives

CHAPTER 4

Dissociation theories of hypnosis

Erik Z. Woody and Pamela Sadler

4.1. Introduction

What do we in truth understand by the word dissociation? Is it a psychological event with underlying physiology, or just a metaphor?

Frankel (1994a)

Dissociation theories of hypnosis start out with an unpromising enigma: What exactly is the word ‘dissociation’ supposed to mean in the context of hypnosis? Hilgard (1977), who appropriated the term ‘dissociation’ from Janet (1901), called his theory of hypnosis ‘neodissociation theory’ to distinguish it from some of Janet’s ideas, such as the concept that people who show dissociation have a particular form of mental deficit or biologically based weak-mindedness. However, in Hilgard’s hands, the concept of dissociation then evolved so that it appeared to mean several quite different things, as we will review in a moment. Bowers (1990, 1992) eventually pointed out that, in effect, neodissociation theory was virtually at war with itself. For example, Hilgard used the concept of dissociation to derive opposite, obviously inconsistent explanations of hypnotic phenomena. With regard to hypnotic analgesia, Hilgard and Hilgard (1975) inferred that ‘For the highly hypnotizable subject within hypnosis, pain reduction is essentially effortless’ (p. 156); whereas Hilgard (1977) inferred that to reduce pain,

‘The successful subject must use considerable effort, initiative, and ingenuity to achieve success’ (p. 181). As we will explain in more detail later, these contrasting predictions have to do with whether the concept of dissociation is applied to control processes (implying increased effortlessness) or to monitoring processes (implying decreased self-awareness of effort).

Clinical instances of dissociative phenomena, such as fugue states and depersonalization, have often been characterized as ‘the spontaneous mobilization of hypnotic experience’ (Spiegel, 1990, p. 127; for critical discussions of the literature see Nash, 1992; Horevitz, 1994). If indeed hypnotic responding recruits individual differences in the tendency or ability to dissociate, then one might reasonably expect that measures of individual differences in dissociative tendencies should correlate strongly with individual differences in responsiveness to hypnosis. However, real-life dissociative tendencies, as measured by the Dissociative Experiences Scale (Bernstein and Putnam, 1986), turn out to be only very modestly related to hypnotizability (e.g. Faith and Ray, 1994), and it is possible to argue that even this modest relationship is an artifact of context effects (Kirsch and Council, 1992). Given this unexpected nonrelationship, the idea has been advanced that dissociative tendencies and hypnotizability are more or less orthogonal, crossing individual difference factors, such that

individuals who are high on both variables have even been regarded as ‘double dissociators’ (e.g. Peebles-Kleiger, 2005). Such a proposal clearly does not resolve the issue of what it might mean to link hypnosis to dissociation; instead, it wraps this enigma inside a further one—namely, the concept of a *double* dissociator.

In short, partly due to vagueness and inconsistencies, dissociation theories of hypnosis have been open to fairly strong lines of criticism (e.g. Spanos and Burgess, 1994; Kirsch and Lynn, 1998). Further, Frankel (1994b) argued that the mischief in the rather vague concept of dissociation has spread beyond the realm of hypnosis research, partly because the concept appears to have been legitimized by this research. He pointed out that uses of the term ‘dissociation’ in the clinical realm tended to be strikingly unclear; moreover, ‘Clinicians have claimed for dissociation a large series of observable clinical behaviors and reported experiences that could equally well, if not more persuasively, be explained by other mechanisms’ (Frankel, 1994b, p. 87). In a similar vein, Kihlstrom (1994) noted that using the label ‘dissociative’ for certain psychopathologies is ‘somewhat vexatious, because the term has a number of meanings in psychology’ (p. 383).

Given all these problems, one might understandably suspect that, because of its lack of clarity, the concept of dissociation is not a very good vantage point from which to solve the puzzles of hypnosis and its relationship to the rest of psychology. Nonetheless, in this chapter we will argue that certain ideas that may be grouped under the term ‘dissociation’ hold great promise in understanding hypnosis. As the foregoing discussion illustrates, however, we need to aim for the greatest possible clarity about the particular meaning of the concept that is denoted by each such idea.

4.2. The development of dissociation theories of hypnosis

4.2.1. Janet’s concept of dissociation

Janet’s (1901, 1907, 1925) original concept of ‘*désagrégation*,’ translated as dissociation, was

a mechanism he proposed to underlie both hypnosis and hysteric disorders, which he viewed, like hypnosis, as suggestive phenomena. In dissociation, one of the subunits of mental life becomes split off from the rest, and thereby separated from both awareness and voluntary control. Suggestion works by activating these dissociated ideas, which remain outside of awareness. Thus, for Janet, hypnosis involved two essential features: (1) a constriction of awareness, in which subjects are unaware of material to which they would have conscious access under other circumstances; and (2) the special influence on behavior of this material excluded from awareness through activation by suggestion.

Accordingly, we could argue that from Janet’s view, a prototypical hypnotic suggestion would be something like the post-hypnotic ankle touching suggestion on the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor and Orne, 1962). In this suggestion, after a tapping noise is demonstrated to the hypnotic subjects, they are told, ‘When you hear the tapping noise, you will reach down and touch your left ankle. You will touch your left ankle, but *forget that I told you to do so*’ (italics added). The lack of awareness for the instruction and the behavioral enactment through activation of this idea excluded from awareness are both central to Janet’s conception.

It is interesting to note, given Janet’s influence on modern hypnosis research, that only a tiny minority of the test suggestions on widely used standardized scales of hypnotizability are of this form, in which material excluded from awareness is activated by suggestion. Nor does the scoring for such a suggestion attempt to verify that the people who touch their ankles are actually unaware of the earlier instruction (see Sadler and Woody, 2004, who argue that this problem produces a 12 percent rate of spurious passes for this item, as shown in its pseudo-guessing parameter).

Janet qualified his notion of dissociation by positing that dissociation may often be partial, rather than complete (James, 1890). In the partial case, awareness and voluntary control for the dissociated material are reduced, but not eliminated. Despite this proviso, subsequent work testing Janet’s dissociation concept of hypnosis tended to focus on a more extreme interpretation: If an area

of mental activity is indeed ‘split off’ functionally from the rest, then hypnotic subjects should be able to engage in two simultaneous mental activities (one within that area and another outside it) without their interfering with each other (Hull, 1933; White and Shevach, 1942; Rosenberg, 1959). This research was generally interpreted as failing to support Janet’s concept of dissociation. For example, Hull (1933, p. 50) concluded, ‘Whatever else so-called hypnotic dissociation may be, it is not a functional independence between two simultaneous mental processes’.

4.2.2. Hilgard’s neodissociation theory

In going back to Janet’s work, Hilgard focused more on Janet’s theme of conscious versus unconscious processes in dissociation. From Janet, Hilgard borrowed the concept of dissociation as ‘the splitting off of certain mental processes from the main body of consciousness with various degrees of autonomy’ (Hilgard, 1992, p. 69). He elaborated this idea with two particular metaphors, the ‘amnesia-like barrier’ (or ‘cloak of amnesia,’ Hilgard, 1994, p. 45) and

the ‘hidden observer’ (Hilgard, 1977). Specifically, Hilgard found that in some hypnotically analgesic subjects, it was possible to suggest the presence of a so-called ‘hidden observer’, which could report the presence of pain at the same time as the other part of the self experienced no pain. This finding suggested to Hilgard that parallel streams of consciousness co-exist, separated by amnesic barriers that divide experience into separate, simultaneous channels. This became an important plank in Hilgard’s neodissociation theory of hypnosis.

Another, perhaps more important and enduring direction in Hilgard’s theorizing was his attempt to advance a model of hierarchical levels of control mechanisms as a framework for explaining hypnotic phenomena (Hilgard, 1977, 1991, 1992). His diagram of this model, presented many times in his writings (originally in Hilgard, 1973; reprinted, for example, in Hilgard, 1991, 1992, 1994), is reproduced as Figure 4.1. At the lower level in this model, there are many co-existing cognitive control subsystems, three of which—labeled Cognitive Control Structures 1, 2 and 3—are shown in the diagram. Each of these control subsystems is

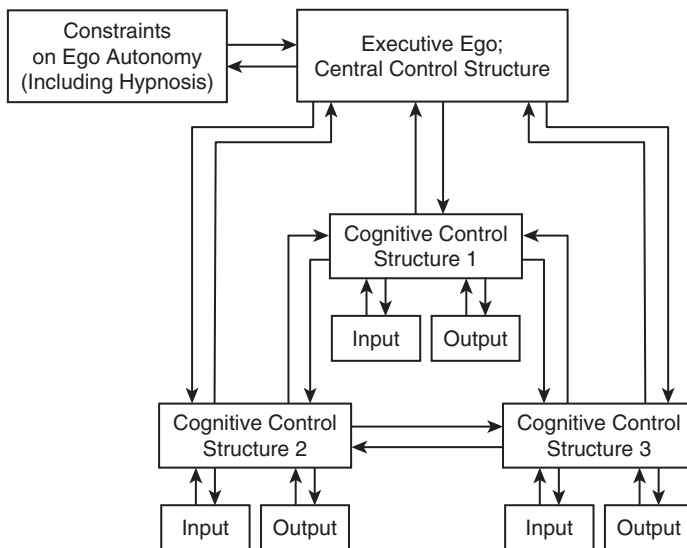


Figure 4.1 Hilgard’s hierarchical model of cognitive control. From ‘A neodissociation interpretation of pain reduction in hypnosis’ (p. 405) by E. R. Hilgard, 1973, *Psychological Review*, 80: 396–411. Copyright 1973 by the American Psychological Association. Reprinted by permission.

capable of operating somewhat independently, with its own input and output. However, these subsystems are ordinarily subordinate to a higher-order executive system—labeled ‘Executive Ego’—which monitors and co-ordinates their activation and interaction. Hilgard hypothesized that hypnosis alters the function of this executive system and its hierarchical relationship to the subsystems. For example, he argued as follows:

Effective suggestions from the hypnotist take much of the normal control away from the subject. That is, the hypnotist may influence the executive functions themselves and change the hierarchical arrangements of the substructures. This is what takes place when, in the hypnotic context, motor controls are altered, perception and memory are distorted, and hallucinations may be perceived as external reality (Hilgard, 1991, p. 98).

More specifically, Hilgard speculated that hypnosis may have several distinguishable effects on the executive system. First, hypnosis may reduce its planning and initiative functions; hence, ‘the hypnotized person does not independently undertake new lines of thought or action’ (Hilgard, 1979, p. 50). Second, hypnosis may reduce the monitoring functions of the executive system; hence, hypnotic subjects become unaware of some aspects of their mental operations, such as the role of their own volition in their hypnotic experiences. Third, hypnosis may disturb the ‘balance’ between the monitoring and executive control functions (Hilgard, 1994), such that the monitor fails to correct the control functions: ‘The monitor does not offer a correction; hence imagination may be confused with external reality’ (Hilgard, 1992, p. 97).

As we shall see, these three insights provide the foundation for current dissociation theories of hypnosis. Unfortunately, however, Hilgard never offered an integrated cognitive model of these hypothesized effects, which he might have attempted, for example, by showing how they could be incorporated into a representation such as Figure 4.1. (Crucially, Figure 4.1 does not show executive control and executive monitoring as separable functional units.)

Instead, Hilgard attempted to fuse his hierarchical control model of hypnosis, broadly derived from cognitive psychology, with the concepts of the amnesic barrier and the hidden

observer, broadly derived from Janet. For example, he argued that the effects of hypnosis on the executive monitor are attributable to the splitting of its operation into conscious and unconscious parts: ‘Some fraction of it exists behind an amnesia-like barrier’ (Hilgard, 1992, p. 99). Indeed, Hilgard came to emphasize the idea, derived from Janet, that hypnosis represents a constriction of awareness, in which, due to such amnesic barriers or ‘fractionations’ (Hilgard, 1992, p. 97), crucial information about mental operations, which would ordinarily be available, is walled off from access. As a result, the monitor ‘can report’ the hypnotic experiences ‘without being a party to how they came about’ (Hilgard, 1992, p. 98).

An important limitation of this attempted fusion is that ideas like the amnesic barrier and hidden observer are metaphors that lie comfortably within neither the cognitive nor the physiological domain. Thus, what they mean is somewhat unclear. In addition, Hilgard tended to describe mental operations somewhat anthropomorphically, as if the hypnotist, the executive control system and the monitoring system were three individuals involved in some kind of magic show:

The monitor may express surprise that an arm cannot be bent, or amusement over some fantasied reality, such as floating on a cloud. ... The executive system, in collaboration with the hypnotist, succeeds in giving rise to the actuated experiences. How this has been done may be concealed from the monitor (Hilgard, 1992, pp. 97–98).

In short, rather than offering a more complete explanation at a particular level, Hilgard tended to mix together incomplete explanations across somewhat vaguely defined levels. This problem has made his neodissociation theory readily open to attack.

4.2.3. Bowers’s critique and reformulation of neodissociation theory

Perhaps the most prominent critic of neodissociation theory was Spanos (1986, 1987, 1991). He characterized Hilgard’s theory as a ‘special process view’, because of its reliance on unusual processes, especially dissociation. The approach

used by Spanos was generally not to criticize Hilgard's theory directly, but instead to try to show that its special constructs were completely unnecessary for explaining hypnotic behavior. In contrast to Hilgard's tendency toward somewhat vague metaphors and anthropomorphizing, Spanos posed seemingly straightforward explanations of hypnotic behaviors in terms of the same general purpose social-psychological processes that may be used to explain everyday, nonhypnotic social behavior. He characterized this 'social psychological' view of hypnosis as follows:

The responses of high hypnotizables to suggestions for amnesia, analgesia, and so on, are often not what they seem, and ... such responses in fact reflect mundane social-cognitive processes such as compliance-induced reporting biases, alterations in attentional focus, and misattribution of experience, rather than such special processes as dissociation (Spanos and Coe, 1992, p. 110).

Spanos published a very extensive corpus of experimental work in support of this claim.

One response by defenders of neodissociation theory was to award Spanos a partial victory, especially with regard to people who lack high hypnotic talent; however, they argued that dissociation still has its place in explaining the rarer responses of the most hypnotically capable. For example, consider the following remarks from Kihlstrom (1985):

The behavior of hypnotic 'virtuosos', who make extreme scores on the scales of hypnotic susceptibility, may best be analyzed in terms of underlying dissociative changes in the cognitive system. For the remainder (arguably the greater portion of the population at large), it may be more profitable to focus on the cognitive strategies that they deploy to construct responses to hypnotic suggestions, and the situational factors that lead them to do so (p. 409).

A more combative defense of neodissociation theory came from Bowers, who yielded no ground. In particular, Bowers and Davidson (1991) provided a detailed critique of weaknesses in Spanos's conceptual framework. For example, they alleged that Spanos conflated the issue of whether hypnotic behavior is purposeful, in the sense that it is goal directed, with the issue of whether it is performed on purpose,

in the sense that it stems from executive initiative and effort; thus, Spanos incorrectly inferred from the goal-directed nature of hypnotic acts that they cannot be nonvolitional. In addition, Bowers and Davidson provided a thorough re-examination of some of the experimental work by Spanos and his colleagues, arguing that many of Spanos's attempts to discredit neodissociation theory are 'both irrelevant and misleading' (p. 114). One shortcoming of some of Spanos's work is that mechanisms he proposes as alternatives to dissociation often sound very intuitively plausible, but do not bear up well under closer experimental scrutiny. An example would be his proposal of 'goal-directed fantasies' as the cognitive strategies that mediate hypnotic responsiveness. In fact, careful subsequent research has clearly shown that goal-directed fantasies, although present, play a very minor, or even counterproductive role in producing hypnotic behavior (e.g. Hargadon *et al.*, 1995; Comey and Kirsch, 1999).

In light of Bowers's vigorous advocacy of Hilgard's neodissociation theory, it is interesting that he himself became troubled by some inconsistencies in the theory. In particular, Bowers (1990, 1992) argued that amnesic barriers were an unlikely mechanism for much hypnotic behavior. Consider that for an amnesic process to be the origin of the subjective experience of nonvolition, as Hilgard claimed, the amnesia would usually need to be spontaneous, rather than suggested. This is because, aside from specific suggestions for amnesia, other kinds of hypnotic suggestions do not typically include the suggestion of amnesia. However, the experience of nonvolition is quite common, whereas the occurrence of unsuggested amnesia is rare (Cooper, 1966). Therefore, the amnesic barrier mechanism is an explanation of relatively frequent and pervasive hypnotic phenomena in terms of a rare and peculiar one. Further, Bowers (1992) pointed out that neodissociation theory requires that the amnesic barriers be arbitrarily selective: 'The pain and cognitive effort to reduce it is hidden behind an amnesic barrier, but not the original suggestions for analgesia, nor the goal-directed fantasies that typically accompany the reductions in pain' (pp. 261–262). This *ad hoc* quality, too, seems implausible.

In addition, Bowers (1990, 1992) drew attention to the fact that the mechanism of the amnesic barrier implies, contrary to the rest of Hilgard's hierarchical control model, that hypnotic responses do not involve any change in the actual control of behavior. That is, a hypnotic response could be enacted voluntarily and effortfully in the ordinary way, but then this mental fact could be hidden from awareness behind an amnesic barrier. In this case, the subject's experience of the response as involuntary and effortless would simply be an illusion. In contrast, Hilgard (1977) alternatively argued that a hypnotic response may be a true reflection of an underlying alteration in the hierarchy of control of behavior. Specifically, the response may stem from a subsystem of control being activated directly by a suggestion, in a manner that bypasses executive initiative and effort. In this case, the subject's experience of the response as involuntary and effortless would be accurate, rather than illusory.

Thus, neodissociation theory makes exactly opposite predictions about the nature of cognitive effort in hypnosis (both low and high) and its relationship to the subjective experience of involuntariness (both correct and illusory). Partly to deal with this inconsistency, Bowers (1990, 1992) proposed a reformulation of neodissociation theory, which split it into two distinct, complementary components: dissociated experience and dissociated control.

Dissociated *experience* refers to changes in how hypnotic subjects experience their behavior: in hypnosis, the effort and volition that may be operative in enacting suggestions are hidden or dissociated from consciousness, such that 'the control being exercised is not consciously experienced' (Bowers, 1990, p. 164). According to the dissociated experience account of neodissociation theory, cognitive effort in successful hypnotic responding is actually high, but mistakenly experienced as low: 'The hypnotized subject remains for the most part unaware that a good deal of effort may have been exercised in order to produce the suggested state of affairs' (Bowers, 1990, p. 162).

In contrast, dissociated *control* refers to changes in the underlying control of behavior: in hypnosis, lower subsystems of control are activated more or less directly by suggestions, bypassing

the higher executive level of control, along with the processes of volition and sustained effort ordinarily contributed by it. According to the dissociated control account of neodissociation theory, cognitive effort in successful hypnotic responding is actually low and correctly experienced as low:

The experience of volition or intention ordinarily reflects executive control over behavior. However, it is precisely such executive control that is minimized or bypassed when a hypnotized subject enacts the suggested state of affairs. Consequently, hypnotically suggested behaviors are typically experienced as nonvolitional (Bowers and Davidson, 1991, p. 107).

Although at first Bowers (e.g. 1990) conceptualized dissociated experience and dissociated control as 'complementary aspects of hypnotic responsiveness' (p. 160), he soon came to de-emphasize dissociated experience and strongly promoted dissociated control as the main dissociative process underlying hypnosis (e.g. Bowers and Davidson, 1991; Woody and Bowers, 1994). He viewed dissociated experience as problematic because of the previously mentioned conceptual implausibility of amnesic barriers as the underlying mechanism. In addition, he was troubled by the observation that the dissociated experience account, with its position that the hypnotic experience of nonvolition is illusory, seemed perilously close to the social-psychological model of Spanos (1986), which posits that hypnotic subjects maintain full volitional control over their behavior, but, consistent with various cues in the test situation, mistakenly, although sincerely, interpret their actions as involuntary. Indeed, rather than dissociated experience, it was the dissociated control version of neodissociation theory that Bowers and Davidson (1991) defended against the social-psychological alternative of Spanos. Further, Bowers pointed out that the dissociated experience account appeared to limit hypnotherapeutic effects to altering clients' impressions of why therapeutic changes occur, rather than enhancing their ability to make such changes:

The only conceivable advantage of high hypnotizability would thus be a very limited one: patients high in hypnotic ability would be more able than

their low-hypnotizable counterparts to dissociate from consciousness any special effort or motivation involved in achieving treatment success (Bowers, 1990, p. 166).

He argued that this implied limitation was inconsistent with the actual range of effects of hypnotic treatments. In light of these issues, he eventually adopted the following position: 'Dissociation is not intrinsically a matter of keeping things out of consciousness—whether by amnesia, or any other means' (Bowers, 1992, p. 267).

Despite Bowers's misgivings about dissociated experience, it remains an important perspective, as we shall see, in the hands of other theorists such as Kihlstrom (e.g. 1985, 1992). In addition, Bowers's formulation of dissociated control became the foundation for Woody and Bowers's (1994) dissociated control theory, which we will review later.

Bowers always portrayed his reformulation of neodissociation theory as simply clarifying and drawing out implications of ideas that had already been advanced by Hilgard himself. It is possible to quibble about the extent to which this claim is correct. First, Bowers strongly shifted the balance between the two concepts: dissociated experience is the predominant process in most of Hilgard's writings, whereas dissociated control became the predominant process for Bowers. Second, Bowers described dissociated control as a somewhat simpler, more monolithic process than Hilgard, who described it as multifaceted and emergent. It is interesting in this regard to compare the following passages from Hilgard and Bowers, respectively:

A more massive dissociation, as far as the executive is concerned, may be the consequence of the summing up of many specific subsystems for which control has been relinquished. Such an interpretation permits hypnosis as a state to be a relative matter, the specific dissociation being identifiable, but the general state being a matter of how many specific dissociations are operative and how pervasive they are (Hilgard, 1992, p. 96).

Hypnotic responsiveness involves a somewhat reduced influence of executive control over hypnotically enacted behavior. ... In other words, suggestions administered to a hypnotized person

can more or less directly activate subsystems of control, which are partially and temporarily dissociated from executive (intentional, conscious) control (Bowers and Davidson, 1991, p. 107).

Bowers's account is more elegantly straightforward, but also much simpler in its conception of how dissociation unfolds.

There is another, potentially more important way in which Bowers's reformulation departed from Hilgard. Bowers drew a much stronger distinction between dissociated experience as a change in monitoring, and dissociated control as a change in executive control. In contrast, Hilgard (1994) noted, 'It is artificial to sharply separate executive from monitoring functions since all initiated action is monitored' (p. 45). He argued that a major function of the monitor is to offer ongoing correction to the executive control process:

If one course of action does not work, another may be tried. Whether the second course works better is determined by the monitoring function; the executive function then acts on this information (Hilgard, 1994, p. 46).

Accordingly, as mentioned earlier, Hilgard sometimes proposed that dissociation of monitoring from executive control might be one candidate mechanism in hypnosis (e.g. Hilgard, 1994). Because Bowers's reformulation portrayed monitoring and control as quite separable, rather than interdependent processes, it de-emphasized this possibility.

Nonetheless, Bowers's reformulation, with its emphasis on the concept of dissociated control, was important for refocusing attention on the idea that hypnosis may alter the control of behavior, rather than simply obscure its self-perception. This view of hypnosis had appeared previously at various times in the history of hypnosis research. One of the clearest early expressions of the concept of dissociated control is from Sidis (1899):

The superior or the highest nervous centres ... possess the function of *choice* and *will*. ... These superior choice and will-centres, localized ... in the frontal lobes ..., on account of their selective and inhibitory function, may be characterized as inhibitory centres *par excellence*.

In hypnosis the two systems of nervous centres are dissociated, the superior centres and the upper

consciousness are inhibited, or, better, cut off, split off from the rest of the nervous system ..., which is thus laid bare, open to the influence of external stimuli or suggestions (pp. 68–69).

Somewhat similar ideas came out of the Pavlovian school; for example, Völgyesi (1966) described hypnosis as a circumstance in which ‘the older subcortical nerve-organs ... function much more independently and vigorously in relation to the higher centres than when they are subjected to the wakeful, inhibiting, braking supervision of the neo-cortical centres’ (p. 83).

4.2.4. Woody and Sadler’s proposal for the reintegration of dissociation theories

A further stimulus for the development of dissociation theories of hypnosis was an interesting critique by Kirsch and Lynn (1998). They focused on what they saw as unresolved conceptual problems and inconsistencies in these theories. They proposed a set of criteria that they believed any complete and adequate explanation of hypnosis should meet, and then they argued that dissociation theories, despite their complexity, fall short of fulfilling such a goal. In addition, they drew attention to the often striking inconsistencies between different versions of dissociation theory (such as dissociated experience and dissociated control), and they were particularly critical of the problematic special mechanisms—the amnesic barrier and the hidden observer—that appeared to lie at the heart of dissociation theories.

In response, Woody and Sadler (1998) argued for a plurality of provisional theories of hypnosis, each being an admittedly incomplete and as yet inadequate work in progress: ‘Given the complexity of emerging empirical findings in hypnosis research, any theoretical view is likely to be highly provisional, requiring frequent revision and rethinking’ (p. 193). More importantly, they maintained that the various theoretical positions concerning dissociation are actually closely related and reasonably consistent with one another. Further, these positions can readily be reformulated without using the problematic mechanisms of the amnesic barrier and dual streams of consciousness, as in the hidden observer.

This reformulation can be achieved by viewing dissociation theories from the perspective of dual-system models of action, such as those advanced by Goldberg (1987), Lhermitte (1986), Mesulam (1986) and Norman and Shallice (1986). In these models, there are two complementary systems that manage the initiation and control of action: a higher, executive system principally responsible for volitional acts, and a lower, diverse system principally responsible for more environmentally driven, routine acts. One advantage of this perspective is that it opens hypnosis research to a broader horizon of work in cognitive neuroscience. For example, Goldberg has argued that the two systems represent a fundamental distinction in the evolutionary architectonics of the cortex, with an ‘archicortical trend’ involved with volitional behavior, and a ‘paleocortical trend’ involved with environmentally triggered behavior. Woody and Sadler posited that these kinds of ideas, which developed independently of Hilgard’s neodissociation theory, provide a sounder foundation for conceptualizing hypnotic dissociation than do the rather *ad hoc* mechanisms of amnesic barriers and hidden observers.

Woody and Sadler (1998) then outlined a proposed reintegration of the dissociated experience and dissociated control theories. This reintegration also attempted to relate these theories to the social-psychological (or socio-cognitive) account of hypnosis. In the next part of this chapter, we offer an expanded, more complete version of this proposal. In developing this integrative framework, we further address aims suggested in our earlier proposal:

1. To specify and differentiate clearly the processes denoted by the proposed types of dissociation, while at the same time showing how they fit together conceptually.
2. To distinguish dissociation theories from otherwise similar, alternative accounts of hypnotic phenomena
3. To draw provisional links of hypnotic phenomena with psychopathological conditions, although this approach requires caution (cf. Dixon and Laurence, 1992).

4.3. An integrative view of dissociation theories of hypnosis

4.3.1. What are the phenomena to be explained?

It is important to begin by briefly considering the range of hypnotic phenomena that theory may address. Table 4.1 presents a fairly comprehensive, although not exhaustive, breakdown of major classes of hypnotic behavior. There are two major types of suggestion—facilitating and blocking. These are crossed with three types of content—motor action; sensation and perception; and memory and identity. Within each combination of the two factors lies a respective realm of hypnotic behavior, as shown in the table. Facilitating suggestions for motor action give rise to so-called ideomotor behaviors, in which the suggested idea of a movement elicits the actual movement. Blocking suggestions for motor action give rise to the circumstance in which exerting will fails to produce movement; e.g. in motor challenge suggestions, effort by the subject is insufficient to counteract a previous motor suggestion. Facilitating suggestions for sensation and perception give rise to positive hallucinations in various modalities (e.g. visual, auditory and olfactory); whereas blocking suggestions for sensation and perception give rise to negative hallucinations, including analgesia. Finally, facilitating suggestions for memory and identity give rise to memory creation and altered identity (e.g. sexual identity; Noble and McConkey, 1995; Burn *et al.*, 2001; McConkey *et al.*, 2001), whereas blocking suggestions for this type of content give rise to phenomena such as post-hypnotic amnesia. Some suggestions may

combine two of these cells; e.g. a post-hypnotic suggestion may involve both facilitating a motor action (e.g. ankle scratching) and blocking memory (forgetting the suggestion).

Even casual consideration of this table indicates that hypnosis is a multifaceted collection of phenomena involving a wide diversity of mental systems. Thus, the various hypnotic phenomena probably recruit somewhat differing patterns of individual differences and rely on multiple underlying processes (Shor *et al.*, 1962; Hilgard, 1977; Spanos *et al.*, 1980; Woody *et al.*, 1992, 2005; Woody and McConkey, 2003). In light of this complexity, Woody and Sadler (1998) made the following observation:

Any reasonably well-focused theory of hypnosis seems unlikely to explain all its features because of the multifaceted nature of the subject matter itself. Asking which is the one correct explanation for hypnosis may be like asking which is the one correct explanation for poverty (p. 193).

Nonetheless, across this diverse matrix of hypnotic behavior there is an essential common denominator: in hypnosis all these behaviors are accompanied by the subjective experience that the self is not the origin of the response. Weitzenhoffer (1980) called this alteration in the sense of agency the ‘classic suggestion effect’. It has also often been labeled as ‘involuntariness’ or ‘nonvolition’, although these terms tend to apply more directly to some hypnotic responses, such as motor acts and amnesia, than to others, such as hallucinations (which may indeed, in some sense, be involuntary imaginings, but this is not the phenomenal experience of the subject). A particularly apt attempt to capture the essential subjective quality of hypnotic responses is Tellegen’s (1978/1979, p. 220)

Table 4.1 Breakdown of major classes of hypnotic behavior

| Type of suggestion | Type of content | | |
|--------------------|---------------------------|---------------------------------------|---|
| | Motor action | Sensation and perception | Memory and identity |
| Facilitating | Ideomotor behaviors | Positive hallucinations | Memory creation, Changes in identity |
| Blocking | Failures of willed action | Negative hallucinations, Analgesia | Post-hypnotic amnesia |

‘minimal’ descriptive definition of hypnotizability: ‘It is the ability to represent suggested events and states imaginatively and enactively in such a manner that they are experienced as real’. For a suggested state of affairs to appear as real, it must be experienced as occurring extra-volitionally.

In summary, this change in the experience of volition accompanies virtually all true hypnotic phenomena; hence, any good theory of hypnosis ought to explain its origins. In addition, however, it is well to keep in mind the broader matrix of hypnotic behavior, as depicted in Table 4.1, in evaluating any candidate theory of hypnosis. It is possible that any particular explanatory scheme applies well to only certain types of suggestion or content and is difficult to extend to the others.

4.3.2. The overarching model

Figure 4.2 depicts our integrative model of dissociation theories of hypnosis. This diagram is quite different from Hilgard’s (Figure 4.1). In particular, Hilgard’s diagram cannot represent the major features of dissociation theories (including his own neodissociation theory) because it does not distinguish between executive control and monitoring. In contrast, we have adopted from Frith (1992) the straightforward idea of representing the Executive Monitor as a separate functional unit, closely interconnected to Executive Control.

The model shows two levels of control of action: the higher executive level, comprised of Executive Control and Executive Monitoring; and the lower level, consisting of Subsystems of Control. Consistent with dual-system models of action (e.g. Norman and Shallice, 1986), it is the subsystems of control that directly handle the selection and tracking of behavior; the executive system offers a second level of control, associated with conscious volition, which functions by modulating and monitoring the subsystems of control. Note that there is a feedback loop between the executive functions and the subsystems of control (from Executive Control to Subsystems of Control via path *b*, from Subsystems of Control to Executive Monitoring via path *e*, and from Executive Monitoring to Executive Control via path *d*). This is the feedback loop by which executive oversight of action occurs. Within this feedback loop is another important feedback loop, which lies between Executive Control and Executive Monitoring (via paths *c* and *d*). Through these reciprocal connections, Executive Control passes information such as intentions to the Executive Monitor, and, in turn, the Executive Monitor passes information about ongoing activity in the subsystems to Executive Control.

All dissociation theories of hypnosis may be viewed as proposing that these feedback loops, which inter-relate executive functions with subsystems of control, are disrupted from their

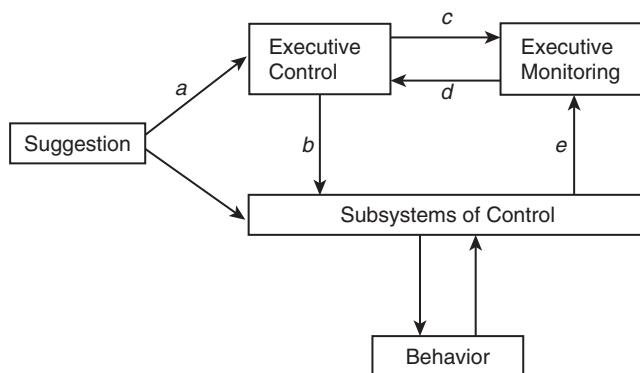


Figure 4.2 An integrative model of dissociation theories of hypnosis. A theory of *dissociated experience* involves the weakening of path *c*, and possibly of path *e*. A theory of *dissociated control* involves the weakening of path *b*, and possibly of path *a*. A theory of *second-order dissociated control* involves the weakening of path *d*.

usual function in some way. The arrows labeled with lower case letters in the figure denote functional connections whose weakening may give rise to hypnotic responses, according to different theories of dissociation.

First, according to the *theory of dissociated experience*, the weakening of path *c*, the functional connection from Executive Control to Executive Monitoring, is crucial. In this case, even when behavior is actually initiated voluntarily by Executive Control, this information is not passed to the Executive Monitor and thus remains inadequately represented in consciousness. It is also possible that a theory of dissociated experience would implicate a weakening of path *e*, from the Subsystems of Control to the Executive Monitor. The general implication is that the Executive Monitor is isolated ('dissociated') from important information about the self-mediated nature of behavior, and this information, which would generally be available in nonhypnotic circumstances, is unavailable to awareness. Therefore, in response to hypnotic suggestions, the subject can willfully initiate behavior without correctly monitoring this volition; as a result, he or she has the illusion that the ensuing behaviors occur extra-volitionally.

Second, according to the *theory of dissociated control*, the weakening of path *b*, the functional connection from Executive Control to the Subsystems of Control, is crucial. In this case, lower Subsystems of Control can be activated more directly by suggestions, bypassing the input of Executive Control. It is also possible that a theory of dissociated control would implicate a weakening of path *a*, from the Suggestion to Executive Control. The general implication is that Executive Control is isolated ('dissociated') from the activation of behavior, and processes of volition and effort, which would generally play more of a role in nonhypnotic circumstances, are minimized. Therefore, in response to hypnotic suggestions, the subject can initiate behavior without the usual executive initiative and effort; as a result, he or she has the correct perception that the ensuing behaviors occur with less volition and effort than is usual outside hypnosis.

Finally, note that the one functional connection we have not yet addressed in this feedback

system is path *d*, from Executive Monitoring to Executive Control. As mentioned earlier, Hilgard suggested that any action initiated by Executive Control is ordinarily tracked by the Executive Monitor to provide appropriate adjustments to the executive control process; in addition, he suggested that hypnosis may block this ongoing correction process. Indeed, this same idea is the focus of a recent revision of dissociated control theory proposed by Jamieson and his colleagues (Jamieson and Sheehan, 2004; Egner *et al.*, 2005; Jamieson and Woody, 2007). They posit that during hypnosis, monitoring feedback becomes functionally dissociated from the executive control process. In our integrative model, this blocking or dissociation is represented by the weakening of path *d*, from monitoring back to control. The general implication is that in hypnosis, once Executive Control has initiated an action, the control process would not be updated by ongoing Executive Monitoring in the ordinary way. Therefore, monitor-detected discrepancies and inconsistencies that would normally lead to changes in control under nonhypnotic conditions may not influence the executive control process under hypnosis. As Jamieson and Woody (2007) point out, this type of dissociation involves a change in the control of control, i.e. a second-order level of cognitive control based on executive monitoring. Thus, for present purposes, we will call this the '*theory of second-order dissociated control*'.

A little later in this chapter, we will provide a more extended account of each of these three dissociation theories of hypnosis, together with key research issues. However, at this point it should be clear that our integrative model both distinguishes the three proposed types of dissociation theory and shows how they fit together conceptually. This coherence does not necessarily mean that all three theories are right (indeed, none of them may be), but it does mean that they are potentially compatible, rather than mutually exclusive. Indeed, it is even possible that hypnosis could involve a fluid mix of the three types of processes, depending on the subject's profile of individual differences and the particular suggestions used (cf. Woody and McConkey, 2003).

4.3.3. What characteristics make dissociation theories different from other theories of hypnosis?

In the 1980s, Bowers's research focused somewhat separately on two problems: dissociation in hypnosis, and the nature of consciousness (e.g. Bowers, 1984, 1987). Strongly influenced by Hilgard, Bowers argued at this time that dissociated experience was the main mechanism underlying hypnotic responding (e.g. Bowers and Brennehan, 1981). At the same time, strongly influenced by the work of Nisbett and his colleagues (e.g. Nisbett and Wilson, 1977; Nisbett and Ross, 1980), he argued that conscious introspection offers a very limited window on the causes of one's own behavior: 'Introspection has no special or privileged access to the causal connections linking behavior to its determinants' (Bowers, 1990, p. 147). That is, to a considerable extent, the self, in understanding the causes of one's own behavior, is in the same position as an outside observer, making use of the same kinds of observations and common-sense hypotheses.

There is an important inconsistency between these two positions: if the self has no special insight into the causes of one's own behavior, then how can hypnosis work by 'dissociating' such insights from awareness? There would actually be no such insights to dissociate. Indeed, as Bowers later moved toward a dissociated control account of hypnosis in the early 1990s, he became convinced that the dissociated experience account was difficult to discriminate from the social-psychological (or socio-cognitive) alternatives (e.g. Woody and Bowers, 1994). This is because both perspectives argue that the hypnotic subject simply misperceives the causes of his or her behavior; i.e. it is the self-evaluation of hypnotic behavior, rather than its initiation and control, that is at stake.

This discussion illustrates the importance of a general issue: What are the defining features of dissociation theories? What makes them essentially different from alternative views of hypnosis that may resemble them in some respects? Our analysis of this problem will necessarily be somewhat speculative, but hopefully illuminating.

We would argue, in contrast to Bowers, that consciousness includes a very important domain of special or privileged insight: whether the origin of an event is internal or external. In the simplest terms, the discrimination is, 'Did I do that, or did it happen to me'? This discrimination applies to both overt events, such as body movements, and to covert events, such as images. It is made possible by the co-ordination of intentions and executive effort with subsequent activity in subsystems of control and ensuing behavior. For motor actions, this co-ordination is a process of 'efference copy', which is information fed forward from executive control to the monitor about the expected changes in body position when a voluntary movement is executed. By monitoring intentions to make movements, movements due to the self can be distinguished from ones with outside causes, and at least some of this process is registered consciously (Hershberger and Misceo, 1983; Blakemore *et al.*, 1999). Similarly, covert behaviors, such as images and other thoughts, appear to be subject to a similar monitoring process, whereby one's own productions are 'tagged' to distinguish them from externally originated perceptions (Bentall, 1990; Frith, 1992). A general term for this process is 'efferent binding' (Haggard, 2003).

Accordingly, we would advance the proposition that dissociation theories are based on the assumption that there is a special, innate mechanism that ordinarily discriminates internally produced actions from externally produced ones. The special insight afforded by this mechanism is usually very robust and reliable, and normally breaks down only in psychotic disorders, such as schizophrenia (Frith, 1992), in which it produces symptoms such as delusions of control and hallucinations, and in dissociative disorders (Kihlstrom, 1994). Hypnosis in highly susceptible people may be viewed as transiently evoking a similar, and otherwise highly unusual, breakdown in this mechanism. This position strikes us as the essence of dissociation theories of hypnosis.

Parenthetically, it is possible to have some doubt about whether standardized hypnosis scales really identify this kind of susceptibility well. For example, Szechtman *et al.* (1998) were able to divide people who scored very high on hypnosis scales into those who could hallucinate

readily versus those who, although they could respond strongly to an invitation to imagine, could not hallucinate. There are other interesting phenomena that occur in only half or less of people who score high on hypnosis scales, including, for example, duality in age regression (experiencing oneself as both a child and an adult; Nogrady *et al.*, 1983) and the post-hypnotic persistence of uncanceled suggestions (ones that continue to evoke responses beyond the end of hypnosis, even though there is no suggestion that they will; McConkey and Barnier, 2004). Some commentators, such as Kallio and Revonsuo (2003) and Weitzenhoffer (1989), have speculated that the widespread use of standardized hypnosis scales has led to the conflation of true hypnotic phenomena, as demonstrated by hypnotic ‘virtuosos’, with other, less interesting phenomena.

In contrast to dissociation theories, other theories of hypnosis do not hypothesize the breakdown of a special, innate mechanism that ordinarily discriminates internally from externally produced actions. One strongly skeptical perspective is to argue that hypnotic subjects do not actually lose track of whether the origins of their behaviors are internal or external at all, but only comply (Wagstaff, 1991, 1998) or play-act (Sarbin, 2005) as if they do, because the circumstances of hypnosis give them tacit permission to do so. However, Kinnunen *et al.* (1994) demonstrated that hypnotic subjects are not misrepresenting or lying about their experiences.

Another perspective is to argue that the sense of involuntariness and external reality, rather than stemming from an innate function or domain of special insight, is a secondary attribution. For example, socio-cognitive theorists hypothesize that hypnotic subjects infer nonvolition indirectly from situational cues indicating that their behavior is supposed to be nonvolitional (e.g. Spanos, 1986; Lynn *et al.*, 1990; Kirsch and Lynn, 1997, 1999; Lynn, 1997). Woody *et al.* (1997) pointed out that this type of explanation fits the easier hypnotic suggestions, such as ideomotor ones, much better than difficult ones, such as hallucinations. This is because simple ideomotor responses, such as lowering one’s arm, are semi-automatic—they do not require executive control, but may be tracked by executive monitoring, a circumstance that,

according to Norman and Shallice (1986), is experienced as ambiguous with regard to will. Woody and Sadler (1998, p. 194) characterized this view as follows:

At least some of the things we ask people to do in hypnosis may be ambiguous with regard to the role of volition, and hence situational factors might well lead them to make attributions of involuntariness, that is, that something about hypnosis made them act rather than their own will.

Another interesting theory that portrays the sense of involuntariness and external reality as a secondary attribution is Barnier and Mitchell’s (2005) discrepancy attribution theory of hypnosis. For example, consider the mental image of a cat. Barnier and Mitchell argue that the hypnotic subject infers the external reality of the cat from the surprising ease with which he or she generates the image in hypnosis. That is, because picturing the cat is easier than the subject expected it to be, he or she infers that the cat is real and, hence, experiences a hallucination.

It is interesting that the Barnier and Mitchell (2005) account has some features that are clearly in common with dissociation theories. Like *dissociated control theory*, it ascribes key importance to reduced cognitive effort in hypnosis (which, according to dual-systems models, reflects low involvement of higher executive control). Like *dissociated experience theory*, it posits that the central characteristic of a hypnotic response is the mistaken evaluation of agency (the cat is attributed to external reality, rather than to one’s own covert mental act). Note, however, that in contrast to our characterization of dissociation theories, an underlying assumption of the discrepancy attribution theory appears to be that there is no innate mechanism by which people ordinarily know whether an image of a cat has internal or external origins. (If there were such a mechanism, it would presumably not be so readily overturned by relatively small increases in processing ease.)

In summary, we propose that there are two defining characteristics of dissociation theories. First, they hypothesize the existence of a special, innate mechanism for discriminating the internal versus external origins of events. This discrimination is probably afforded by the co-ordination of executive control with

executive monitoring. Second, dissociation theories hypothesize that for highly hypnotizable people, hypnosis transiently brings about a disruption of this mechanism. There are at least three ways to view the nature of this disruption, corresponding to the dissociated experience, dissociated control and second-order dissociated control theories. We will next examine these three theories in more detail.

In our view, versions of dissociation theories that do not embed the foregoing two defining characteristics will be difficult to discriminate from other, competing theories. In addition, these characteristics have the advantage of connecting hypnosis research with a wealth of fascinating work in cognitive neuroscience, as we shall explore in the rest of this chapter.

4.4. Key issues and research

4.4.1. Dissociated experience theory

As mentioned earlier, a pure version of dissociated experience theory stipulates that hypnotic suggestions are enacted voluntarily, in the same way as nonhypnotic behavior. According to this account, the crucial difference is that in hypnosis, volition is not monitored correctly and hence the subject has the illusion of involuntariness. The classic suggestion effect, then, is basically a mild delusion of control, in which the subject mistakes an internally generated action for an externally caused one. Even a hallucination, by this account, is a cognition (an image) that has escaped from the supervision of the executive monitor—in effect, an oversight of executive oversight.

Dissociated experience theory provides a reasonably comprehensive explanation of hypnotic behavior. Referring back to Table 4.1, we can provide the following account from this perspective. Hypnotic responses to facilitating suggestions involve the failure to monitor (and thus be aware of) one's own initiation of acts; whereas hypnotic responses to blocking suggestions involve the failure to monitor (and thus be aware of) one's own inhibition of acts. If this monitoring failure pertains to a motor action, then we have phenomena such as body movements and lack thereof that are falsely experienced as involuntary. Specifically, in response

to ideomotor suggestions, hypnotic subjects would actually initiate movement in the usual nonhypnotic way, but misperceive the result to be involuntary; and, in response to motor challenge suggestions, they would actually inhibit their own movement in the usual nonhypnotic way, but again misperceive the result to be involuntary. Exactly the same argument can be applied to the two other major types of content in hypnosis: sensation and perception; and memory and identity. The failure to monitor the initiation (or construction) of images and other thoughts correctly would lead to perceptions falsely attributed to sources outside the self, such as positive hallucinations and false memories. Likewise, the failure to monitor the inhibition of images and other thoughts correctly would lead, according to this view, to negative hallucinations and amnesia. In addition, the lack of monitoring may make hypnotic amnesia more effective than its nonhypnotic counterparts, such as thought suppression, in which monitoring tends to overturn suppression (e.g. Bowers and Woody, 1996).

Kihlstrom (1992) has been an eloquent advocate of the dissociated experience account of hypnosis. A representative statement of his view is the following:

When the cognitive control system that executes the response to a hypnotic suggestion is dissociated from conscious awareness, [the subject] will experience that response as automatic and nonvolitional ... however, that experience is illusory—obviously, there is *some* executive control involved in hypnotic responding, even if the hypnotized [subject] does not experience it as such (Kihlstrom, 1992, p. 308).

An interesting indication of the breadth of this dissociated experience framework is that Kihlstrom (1994) has also used it masterfully to organize a wide range of dissociative disorders. Like hypnotic responses, the symptoms of these disorders can be conceptualized as the result of faulty executive monitoring, and, thus, these conditions may be regarded essentially as disorders of consciousness. In 'dissociative disorders of motor function' (such as psychogenic aphonia and urinary retention), the monitoring of voluntary initiation or inhibition of motor behaviors is disrupted, so that these behaviors are not experienced as under voluntary control.

In 'dissociative disorders of sensation and perception' (such as psychogenic blindness and tactile anesthesia), disrupted monitoring leads to changes in conscious perception, and in 'dissociative disorders of memory and identity' (such as psychogenic amnesia and multiple personality), disrupted monitoring leads to loss or alteration of autobiographical memory. Moreover, the distinction we drew between facilitating and blocking hypnotic suggestions is closely paralleled by Kihlstrom's distinction in these disorders between 'positive' symptoms, in which there is some addition to normal experience, and 'negative' symptoms, in which there is some loss of normal experience. For example, within dissociative disorders of sensation and perception, a negative symptom, such as psychogenic tunnel vision, involves the blocking of some aspect of normal conscious perception. In contrast, Kihlstrom provided the following intriguing account of a positive symptom, psychalgnesia (the experience of pain in the absence of an organic basis):

From the point of view of neodissociation theory, ... the patient's subjective experience of pain results from the construction of vivid mental images of pain, presumably based on memories of past experience. Hence, dissociation is a relevant term since the patients are unaware that they are generating these experiences for themselves. Because of this failure of reality monitoring, the pains are experienced as sensations rather than as images (Kihlstrom, 1994, p. 386).

Kihlstrom (1994) has also attempted to distinguish which aspects of behavior are affected by hypnosis and dissociative disorders versus which are not. He argued that 'explicit' forms of memory, perception and action are affected, whereas their 'implicit' forms are preserved. The terms explicit and implicit originally arose to denote two forms of memory: explicit memory refers to the conscious, intentional recall of an event, whereas implicit memory refers to other changes in behavior stemming from an event, such as priming effects and savings in relearning, which are independent of conscious recollection (Schacter, 1987). Kihlstrom posited that hypnotic suggestions for amnesia disrupt explicit memory, while largely sparing implicit memory (e.g. Kihlstrom and Hoyt, 1990).

Likewise, he has extended the distinction between implicit versus explicit to the realm of perception (Kihlstrom *et al.* 1992): explicit perception refers to the conscious detection of stimuli, whereas implicit perception refers to other effects of such stimuli, such as priming effects, which do not depend on conscious detection. Hypnotically suggested blindness or deafness appears to affect explicit perception while sparing implicit perception (e.g. the subject avoids walking into a table that he or she does not consciously see). Similarly, hypnotic suggestions for motor behaviors may be said to affect explicit forms of action, which are consciously directed, but not implicit forms, which are stimulus driven and automatic. Kihlstrom (1994) made the same argument for the dissociative disorders: they affect the explicit forms of action, perception and memory, while leaving their implicit forms intact.

The dissociated experience theory of hypnosis also has strong conceptual links with other forms of psychopathology. Frith *et al.* (2000) discussed a wide variety of pathological abnormalities in the awareness of action. They argued that these generally involve faulty efference copy mechanisms, reflecting disrupted inter-relationships between representations of intended actions, in the prefrontal and premotor cortex, and representations of the current and predicted state of the motor system, in the parietal cortex and cerebellum. Indeed, Blakemore *et al.* (2003) have applied this model to the hypnotic experience of self-produced actions that are experienced as externally caused. Similarly, positive or first-rank symptoms in schizophrenia, such as hallucinations and delusions of control, may be the results of defective executive monitoring, whereby external stimuli and causes are not discriminated from internally generated thoughts (Feinberg, 1978; Bentall, 1990; Frith, 1992). Frith's explanation of such positive symptoms as defects in executive monitoring is almost identical to the dissociated experience account of hypnosis:

Patients with these symptoms are no longer aware of the 'sense of effort' or the prior intention that normally accompanies a deliberate act. ... In the absence of an awareness of their own intentions, patients will experience their actions and thoughts as being caused, not by themselves, but by some

alien force. A similar argument can be applied to auditory hallucinations. The patients perceive their own thoughts ... as emanating, not from their own intentions, but from some source that is not under their control (Frith, 1992, pp.114–115).

There have been attempts to characterize more directly the failure in monitoring in this wide spectrum of phenomena. One speculation is that there is an underlying disturbance of 'metarepresentation' (second-order representation), or the capacity to entertain a representation of the self doing something. Perner (1993, p. 129) noted that without metarepresentation, a person lacks 'that aspect in which a belief (thinking that) differs from mere thoughts, images (thinking of) and the like'. Frith (1992, p. 130) has proposed that for self-initiated mental acts, 'the appropriate metarepresentation may depend upon an interaction between pre-frontal cortex and those parts of the brain concerned with the primary representations that are the content of the relevant proposition'. Thus, poor integration of frontal and posterior or sub-cortical regions may correspond to faulty metarepresentation, and hence phenomena such as delusions of control and hallucinations.

Another speculation is that the crucial aspect of monitoring that is involved is a felt or emotive component. The philosopher Proust (2003), in discussing anomalous perceptions of one's own intentions due to faulty efference binding, characterized the experience of intention as follows:

The impression of being or not being the agent in one's actions is not *inferred* from what one believes and desires. It is a genuine, direct feeling, experienced dynamically in the changing world, a feeling functionally independent of the specific content of the corresponding intention (p. 317).

Likewise, another feeling that may be central in hypnotic responding is the sense of external reality. William James (1890) argued, '*In its inner nature, belief or the sense of reality, is a sort of feeling more allied to the emotions than anything else*' (p. 283, italics in the original). Similarly, Jaspers (1963) noted, 'Conceptual reality carries conviction only if a kind of presence is experienced'; however, this feeling of presence tends to be taken for granted until it is 'disturbed pathologically and so we appreciate that it exists' (pp. 93–94).

Woody and Szechtman (2000) have dubbed these felt experiences 'feelings of knowing', and they speculated that hypnosis may exert its effects by affecting such feelings of knowing. There is evidence that such felt components are extremely potent, as shown in psychopathological conditions such as delusional misidentification syndromes and derealization. For example, in Capgras delusion, the patient recognizes the face, tone of voice, and so forth of another person, such as a parent, yet denies their authenticity and insists that he or she is an imposter. Ellis and Young (1990) proposed that this condition is caused by the lack of an emotional 'glow' that normally accompanies the perception of a familiar person. Accordingly, Ellis and Lewis (2001) have discussed the neural mechanisms underlying perceptual recognition as involving two parallel streams, an overt/cognitive recognition route and a covert/affective recognition route, which are then integrated. It is fascinating that in Capgras delusion the lack of the covert, felt response is sufficient to overturn the rest of the patient's perceptual detection mechanisms, which apparently are normal. This work suggests that 'explicit' perception, as discussed by Kihlstrom (1994), actually involves both an overt, cognitive component and a covert, affective component. Because of its covert quality, this affective component may appear to resemble implicit perception; however, Ellis and Lewis specifically argued that it is distinguishable from what Kihlstrom calls implicit perception. Alterations in such covert, affective components are what Woody and Szechtman (2000) proposed may underlie hypnotic effects.

A further question of great interest is why hypnosis would create such alterations in feelings of knowing. What is it about the social context of hypnosis that leads to these changes? Woody and Szechtman (2007) argued that it may be promising to consider hypnosis as a circumstance that, perhaps inadvertently, taps into a pre-existing mental system that evolved for managing particular types of social behavior. One likely candidate for such a system is the one that originated to co-ordinate a group under a leader, such that group members' perceptions and actions are entrained to the leader's behavior. This system allows a group to function as if it has a unitary level of executive control, which

has crucial survival value to virtually all mammals that live in groups (Wilson, 1975) and thus probably has fundamental neurophysiological underpinnings. In short, the shift in the determinants of feelings of knowing in hypnosis may reflect the engagement of a particular system for responding in a subordinate role to a dominant other, such that the words of the hypnotist tend to elicit feelings that direct perception and behavior, and higher, more autonomous contributions to information processing are temporarily weakened.

Finally, the dissociated experience theory of hypnosis has interesting implications for the experience of effort in hypnosis. Namely, the perceived sense of effort, being at least partly illusory, should be quite manipulable through suggestion. Such manipulation of the sense of effort has fascinating effects. Williamson and his colleagues hypnotically manipulated the sense of effort during cycling through suggestions of level, uphill or downhill grades (Williamson *et al.*, 2001). This manipulation elicited corresponding cardiovascular changes and patterns of brain activation probably involved in the integration of the sense of effort. Earlier studies had also shown respiratory changes in response to hypnotic manipulations of the sense of effort (Morgan *et al.*, 1973, 1976). In another study, Williams and his colleagues used a hypnotic suggestion of imagined handgrip exercise, without any ongoing real exercise, unlike the cycling study. Patterns of brain activation showed the regulation of effort, even independent of muscle activity and muscle afferent feedback. The researchers interpreted the activation patterns as follows: 'An individual's sense of effort as interpreted by the anterior cingulate cortex (ACC) could potentially serve as a feedback signal, which is routed through the insular cortex to effect appropriate autonomic modulation' (Williamson *et al.*, 2002, p. 1323).

In summary, despite Bowers's (1992) concerns about the cogency of dissociated experience as a theoretical mechanism, it offers an intriguing account of many hypnotic phenomena. In retrospect, it would seem that Hilgard's (1992, 1994) key term, 'amnesic barrier', had unfortunate connotations (such as the implication that all hypnotic phenomena are inherently amnesic). However, dissociated experience theory can

readily be reformulated without this problematic terminology.

4.4.2. Dissociated control theory

Whereas dissociated experience theory focuses on the functional dissociation of executive monitoring, dissociated control theory focuses on the functional dissociation of executive control. The essence of this theory is conveyed by the following statement from Woody and Bowers (1994, p. 57): 'Hypnosis alters not just the experience of behavior, but how it is *controlled*'. As mentioned earlier, according to dissociated control theory, hypnotic suggestions are enacted with less of a role for executive control than is typical for otherwise comparable nonhypnotic behavior. Thus, a pure version of this theory stipulates that the hypnotic subject's experience of nonvolition and effortlessness—rather than being merely an illusion, as in dissociated experience theory—accurately reflects a genuine change in the usual hierarchy of control that governs behavior.

Bowers's (1992) original formulation of the concept of dissociated control highlighted a functional dissociation between executive control and lower subsystems of control, such that in hypnosis the lower subsystems are more directly activated than usual. Woody and Bowers (1994) pointed out that this distinction between two levels of control maps extremely well onto work in cognitive neuroscience concerning the willed versus automatic control of behavior. Specifically, they interpreted and elaborated the concept of dissociated control in terms of the dual-control model proposed by Norman and Shallice (1986).

Norman and Shallice (1986) proposed that there are two distinguishable and complementary information-processing systems for the initiation and control of action. Although there is a wide variety of evidence pointing to the existence of two systems, some of the most compelling evidence comes from the study of various neurophysiological disorders, such as frontal lobe damage, in which the two systems can be differentially impaired (Shallice, 1988). In addition, there is considerable neurophysiological work on the structure of the brain supporting a dual-systems model of action (e.g. Goldberg, 1987). Finally, a range of somewhat odd, but

nonpathological behaviors are intelligible in terms of a dual-systems model, such as action slips (Reason, 1979), in which another purposeful behavior replaces the intended one. (The classic example is William James going upstairs to change for dinner and finding himself putting on pyjamas and getting into bed instead.)

In the Norman and Shallice (1986) model, the lower subsystems of control consist of a large number of decentralized action schemas that both compete and co-operate with one another. In the first type of control, called 'contention scheduling', the activation level of each schema is a function of environmental stimuli and of input from other schemas that are being activated at the same time. When the activation level of a particular schema surpasses a threshold, it is selected and the corresponding action is carried out, while competing schemas are temporarily inhibited. This type of control handles the selection of actions that are comparatively routine and stimulus driven; i.e. ones that do not require conscious attentional control.

For circumstances that demand more novel responses or the overcoming of a strong habitual response, there is a second type of control, called the 'supervisory attentional system', which is centralized and highly flexible. The supervisory system both monitors activity in the contention-scheduling system and has access to the person's higher-level goals. However, according to Norman and Shallice (1986), this executive, higher-level system influences action only indirectly, through biasing the activation levels of the schemas involved in the contention-scheduling process. Thus, rather than directly controlling behavior, the supervisory system operates by modulating contention scheduling.

According to this dual-systems model, the individual's experience of an action reflects the various ways the supervisory system may be involved. If the supervisory system is modulating the contention-scheduling process, the person has the conscious experience of will, or deliberate, effortful control. If the supervisory system is monitoring the contention-scheduling process but not modulating it, then the person has the conscious experience of the action immediately following the idea of it in the mind, which William James (1890) called 'ideomotor' to distinguish it from the experience of

a fully willed act. Finally, if the supervisory system is neither monitoring nor modulating the contention-scheduling process, the person experiences the action as automatic, not involving will.

This model provides an attractive framework for understanding the altered experience of volition in hypnosis. Hypnosis, in highly susceptible people, may be conceptualized as changing the balance between the supervisory and contention-scheduling levels of control, such that the supervisory level is comparatively weakened. Because it is the operation of this higher level of control that is associated with the phenomenal experience of will, the hypnotic subject would therefore experience a weakened sense of will. The person's responses would be especially dependent on the contention-scheduling level of control, and therefore more contextually dependent and stimulus driven than usual, and this control would not be as readily redirected in a deliberate manner. Thus, the experience of hypnotic involuntariness would be an accurate reflection of an underlying alteration in the hierarchy of control.

The dissociated control theory explains not only the core hypnotic experience of involuntariness but also a range of other hypnotic phenomena quite differently from dissociated experience theory. Referring again to the major classes of hypnotic behavior in Table 4.1, we first consider motor actions.

In standardized hypnosis scales, the distinction between facilitating and blocking types of suggestion corresponds to what are known as direct motor suggestions and motor challenge suggestions. These two types of suggested motor responses also differ in other important ways: (1) the direct motor suggestions tend to be much easier than the motor challenge suggestions; (2) the two types of suggestion form clearly separate factors, even controlling for the difference in difficulty (e.g. Woody *et al.*, 2005); and (3) direct motor suggestions are quite strongly correlated with nonhypnotic suggestibility, whereas motor challenge suggestions are not (Woody *et al.*, 1997). These differences indicate that the processes underlying the response to each type of suggestion may be distinct.

The Norman and Shallice (1986) model casts an intriguing light on this distinction. Direct motor suggestions are so easy that virtually no

supervisory modulation is needed to enact them. As the hypnotist directs attention to the act, the supervisory system monitors it, and the corresponding subjective experience is of the ideomotor type, which is neither clearly willed nor entirely unwilled. The hypnotic context biases this ambiguity by offering the subject the widely known idea that something about hypnosis causes such an act, rather than the subject's will. In other words, no alteration of control in hypnosis is needed to explain the experience of nonvolition in response to direct motor suggestions.

In contrast to direct motor suggestions, motor challenge suggestions appear to make an explicit appeal for the involvement of the supervisory system. In these suggestions, there is some initially suggested state of affairs, such as arm rigidity, followed by the instruction to *try* to overcome it, such as by bending one's arm. Carrying out the instruction to try means the subject must attempt to exert will, and this exertion corresponds, in Norman and Shallice's (1986) model, to the supervisory system making a bid to modulate contention scheduling. However, because of the hypnotic alteration of control, the subject may have the experience that effortful attention is less effective than it is outside hypnosis: willing does not work as well as it usually does. Thus, motor challenge suggestions, unlike direct motor ones, seem to be paradigmatic for the dissociated control theory of hypnosis.

Another major class of hypnotic behavior explained readily by dissociated control theory is hypnotic alterations of memory. Shallice (1988) posited that for memory, as for action, the supervisory system offers a higher-order control system to assist with the management of nonroutine problems—in this case, ones that cannot be managed well by lower-level memory retrieval routines. Norman and Bobrow (1979) argued that in response to a nonroutine memory retrieval problem, the supervisory system formulates descriptions of what the relevant memories would be like if they existed, matches these descriptions with records to find likely candidates, and checks these candidates to verify their relevance (see also Conway, 2005).

Accordingly, if hypnosis disrupts the contribution of the supervisory system, as posited by dissociated control theory, it should interfere

with some memory functions while leaving others unaffected. In particular, it should interfere with memory functions that are heavily dependent on the description and verification phases of supervisory system-directed memory processes.

With regard to facilitating suggestions for memory (including inadvertent ones), hypnosis should interfere with verification; i.e. the ability to discriminate appropriate or accurate records from inappropriate or inaccurate ones. Consequently, hypnotic subjects should tend to mistake irrelevant or incorrect associations for the required memories and be falsely confident that these associations match the searched-for material. The evidence on hypnotic distortion of memory is consistent with these implications (Dywan and Bowers, 1983; Laurence and Perry, 1983; Orne *et al.*, 1988).

With regard to blocking suggestions for memory, hypnosis should interfere with access to memories when they require the formulation of preliminary descriptions, as in free recall, but not when they are externally cued, as in cued recall and recognition. Memory tasks that provide external cues should be relatively spared because these cues obviate the need for preliminary descriptions. The evidence on hypnotic amnesia is broadly consistent with these implications, in that hypnotic amnesia differentially impairs free recall, while leaving recognition and implicit memory tasks relatively unaffected (Kihlstrom and Shor, 1978; Evans, 1979; Kihlstrom, 1980; McConkey *et al.*, 1980; McConkey and Sheehan, 1981; Spanos *et al.*, 1982; Barnier *et al.*, 2001).

Finally, we turn to the explanation of hypnotic effects on sensation and perception. Woody and Bowers (1994) did not propose any dissociated control explanation for positive hallucinations, and it remains unclear how this might be done. Nonetheless, they did propose an explanation for the most important type of negative hallucination, namely analgesia. A key aspect of pain is that it grabs attentional resources in a preemptory way (McCaul and Malott, 1984). Norman and Shallice (1986) discuss such attention-grabbing qualities in terms of the computer science concept of an interrupt. That is, certain triggers may break in on any ongoing deliberative activity in the supervisory system by producing an interrupt, a signal of

emergency or high priority. Many of the distressing and disrupting effects of pain result from these interrupts.

Accordingly, Woody and Bowers (1994) proposed that a major component of hypnotic analgesia may be a diminished sensitivity of the supervisory system to such interrupts. With hypnosis, they argued, the capacity for pain to break in at the supervisory level may be lessened; in effect, pain would no longer draw attention to itself. Because a monitoring process would need to generate the interrupt, this explanation appeals to a dissociation of executive control from executive monitoring (i.e. a weakened path *d* in Figure 4.2), rather than a dissociation of executive control from subsystems of control (a weakened path *b*). Thus, in hindsight, it arguably falls within what we have called second-order dissociated control theory.

Although the dissociated experience and dissociated control explanations for certain hypnotic phenomena are strikingly different, it is worth reiterating that the two types of underlying processes are not necessarily incompatible with each other; i.e. hypnosis may possibly bring about changes in both executive monitoring and executive control. In conceptually similar theories of psychopathology, the two corresponding types of processes are not regarded as inconsistent. For example, Frith (1992) interpreted the positive symptoms of schizophrenia, such as delusions of control and hallucinations, as ‘disorders of self-monitoring’, reflecting the failure to track intentions and executive effort. This explanation is akin to the dissociated experience explanation of hypnosis. He interpreted the negative symptoms of schizophrenia, such as avolition and lack of spontaneous behavior, as ‘disorders of willed action’, reflecting the failure of the supervisory system to modulate the lower subsystems of control. This explanation is akin to the dissociated control explanation of hypnosis. Moreover, Frith viewed both types of symptoms as dysfunctions of the same underlying dual system for the control of action. With regard to the neural basis for this system, he located the supervisory system in prefrontal regions—involving the dorsolateral prefrontal cortex, ACC and supplemental motor area, all interacting with one another—and the contention-scheduling system in subcortical

regions—the basal ganglia and the ventrolateral nucleus of the thalamus. The two systems are believed to interact through corticostriatal loops (Alexander *et al.*, 1986), and Frith hypothesized that functional dissociations (or poor integration) between these two systems lead to both positive and negative schizophrenic symptoms.

There are several lines of evidence in support of the dissociated control theory of hypnosis. One of the most important is a series of laboratory studies that Bowers and his colleagues conducted in the 1990s, the main thrust of which was to show that hypnotic phenomena do not operate through effortful control or other deliberate cognitive strategies. For example, Miller and Bowers (1993) showed that, unlike a cognitive-behavioral stress inoculation procedure, hypnotic analgesia did not impair concurrent performance on a cognitively demanding task, indicating that hypnotic analgesia occurs with little or no cognitive effort. Hargadon *et al.* (1995) demonstrated that hypnotic analgesia was just as effective in the absence of any deliberate cognitive strategies, such as engaging in counter-pain imagery. Eastwood *et al.* (1998) verified that hypnotic analgesia required low attentional resources or cognitive load, unlike stress inoculation. Similarly, another series of studies showed that hypnotic amnesia does not depend on any of a variety of proposed effortful cognitive strategies (Bowers and Davidson, 1991; Davidson and Bowers, 1991; Bowers and Woody, 1996; see also King and Council, 1998).

Another approach is to measure cognitive effort during hypnosis indirectly. For example, Ruehle and Zamansky (1997) gave hypnotic and simulating subjects the suggestions to forget one number (8 or 11) and replace it with another number (9 or 12, respectively). Then they asked the participants to do addition problems involving these numbers in the solutions, and, as a baseline condition, they also had them do similar addition problems without a suggestion. In one study, Ruehle and Zamansky used decreased time estimation as a measure of cognitive effort and found that simulators required cognitive effort to carry out the suggestion, whereas the hypnotized participants did not. In another study, these investigators used the time required to carry out a suggested behavior as a measure of cognitive effort. Simulators complying with

the suggestion were slower than control participants doing the same problems without the suggestions, whereas hypnotic subjects were just as fast as the controls. These results indicate that although simulators expended additional effort to change their numbers, the hypnotized participants did not.

Another indirect approach to indexing cognitive effort is the use of heart rate, which increases with effort. Using this approach, Sadler and Woody (2006) showed that in hypnosis, the more vivid imagery of high hypnotizable participants compared to that of their low hypnotizable counterparts required no additional cognitive effort. Of course, the point of all these indirect approaches is to get around the self-report of cognitive effort, which both dissociated-experience and social-cognitive theories posit is an inaccurate measure of actual effort.

A different approach to testing dissociated control theory is to focus on its apparent implications for frontal functioning. Because the frontal lobes are the site of executive control and monitoring, a comparatively broad interpretation of dissociated control theory would imply that people who are high in hypnotic susceptibility may show impaired executive control, and that this impairment may be increased by a hypnotic induction. For example, Woody and Bowers (1994, p. 57) noted, 'A hypnotic induction, with its typically relentless monotony and many allusions to sleep, may be thought of as releasing lower-level functions from the integration that is normally imposed on them by consciousness'.

Accordingly, there have been a few attempts to compare the frontal functioning in people of high versus low hypnotizability, both in and out of hypnosis (e.g. Gruzelier and Warren, 1993; Aikens and Ray, 2001; Kallio *et al.*, 2001). These studies had small sample sizes and may therefore lack statistical power, and their results are rather mixed. Nonetheless, one conclusion that they appear to warrant is that hypnosis does not seem to involve a generalized shutdown of frontal functioning.

Farvolden and Woody (2004) conducted a somewhat more focused study of frontal functioning in 30 high and 30 low hypnotizable participants. To subjects in both waking and hypnotic conditions, they administered

a battery of memory measures that are particularly sensitive to frontal functioning. Compared with low hypnotizables, high hypnotizable participants generally performed significantly less well on the frontally mediated memory tasks, but were comparable on control, nonfrontal memory tasks. Although this pattern of findings supports the trait implications of dissociated control theory, the memory performance of high hypnotizable participants was unaffected by hypnosis versus waking conditions, which is inconsistent with the state implications of the theory.

Finally, a particularly interesting test of dissociated control theory is an experiment conducted by Jamieson and Sheehan (2004). Their work follows from Kirsch and Lynn (1998), who suggested that dissociated control theory may be tested by examining performance on the Stroop color-naming task. In this task, participants are shown color names presented in actual colors, and they are slower at naming the actual color when it is incongruent with the color word. The conscious selection of the correct response (saying the color) in the face of the stronger automatic response tendency (reading the word) is a prototypical executive function (Stuss *et al.*, 1995). Thus, Kirsch and Lynn proposed that if hypnosis weakens frontal executive functioning, as hypothesized in dissociated control theory, then the performance on the Stroop task should decline in hypnosis, particularly for high hypnotizable participants.

Several studies show exactly this type of effect (Sheehan *et al.*, 1988; Kaiser *et al.*, 1997; Nordby *et al.*, 1999). However, their results are open to alternative interpretations due to confounds such as the effects of relaxation and preparatory strategies. Therefore, Jamieson and Sheehan (2004) carefully designed an experiment to deal with these confounds; their study also used ample samples of 66 high and 66 low hypnotizable participants. Consistent with dissociated control theory, they found that Stroop task errors increased significantly for high hypnotizable participants in hypnosis, but not for their low hypnotizable counterparts. Other results were also consistent with dissociated control theory. For example, the use of self-directed strategies, such as rehearsal, was significantly lower in high than low hypnotizables, particularly in the hypnosis condition.

In accordance with a proposal by Woody and Farvolden (1998), Jamieson and Sheehan (2004) argued that what may look like attentional virtuosity in high hypnotizables is really a perseverative inability to disengage from the ongoing focus of attention:

The deeply absorbed experiences that characterize high susceptibles, both in hypnosis and in daily life, are not the products of more efficient frontal networks of attentional control. Rather, they result from a perseveration in the object or theme of current awareness, due to the temporary and partial inhibition of these very processes of attentional control (p. 245).

This seeming paradox that weakened control could look like heightened control is explained more fully by second-order dissociated control theory, to which we now turn.

4.4.3. Second-order dissociated control theory

Whereas dissociated control theory, as originally proposed by Woody and Bowers (1994), focuses on the functional dissociation of lower subsystems of control from executive control (a weakened path *b* in Figure 4.2), second-order dissociated control theory, as proposed by Jamieson and his colleagues (Jamieson and Sheehan, 2004; Egner *et al.*, 2005; Jamieson and Woody, 2007), focuses on the functional dissociation of executive control from executive monitoring (a weakened path *d*). Let's consider a pure form of this theory, in which lower subsystems of control remain integrated with executive control (i.e. path *b* is not weakened), but executive control is cut off from executive monitoring. According to this view, the modulation of subsystems of control by executive control, representing a first level of cognitive control, is intact, whereas the feedback from executive monitoring to executive control, representing a second level of cognitive control, is disrupted. The normal function of such feedback is to allow adjustments of executive control by providing information about the effectiveness of the existing control, thereby making control more flexible and sensitive to changing task requirements (Cohen *et al.*, 2004). Accordingly, if the effect of hypnosis is to disrupt this feedback, the hypnotic subject

should be able to modulate behavior at the first level of executive control, based on higher goals and rules, but relatively unable to adjust this control flexibly in the light of executive monitoring of response conflict, discrepancies, and the like. One implication is that executive control would not be as flexible and complex as it is in nonhypnotic circumstances. Another implication is that the executively monitored effects of suggestions may become quite divergent from the aims of an unchanging control program that is enacting them, because these effects do not lead to the usual executive adjustments to such a program.

The dissociation of executive monitoring from executive control provides another explanation of the phenomenon of hypnotic involuntariness. In a reformulation of Norman and Shallice's (1986) dual-control model, Perner (2003, p. 239) noted, 'Intentional action is defined by the match between what the lower level produces and what the higher level stipulates should be done'. Accordingly, if hypnosis interferes with the fine-tuning of executive control by executive monitoring, the mismatches that result should be experienced as nonvolitional. Other theorists have also attached great importance to such mismatches. For example, Haggard (2003, p. 126) proposed the following: 'The efferent binding process could have the dual function of bringing to consciousness mismatches between intention and action, and of making possible ... consciousness of the relations between my intentions and my actions'. He argued that these aspects of consciousness are critical to the sense of self-agency, as well as the sense of self more generally. Thus, it stands to reason that if hypnosis increases mismatch due to the functional dissociation of executive control from monitoring, these mismatches would strikingly alter the hypnotic subject's sense of agency.

A pure version of second-order dissociated control theory has another potentially attractive implication. Because the first level of cognitive control—the governing of lower subsystems of control by executive control—would be intact, it would allow greater novelty in hypnotic responses than the original dissociated control theory, in which the lower subsystems are hypothesized to be relatively independent from

executive control. Recall that a prime function of executive control, as advanced in Norman and Shallice's (1986) model, is to foster the generation of novel behavior when the circumstances require it. Although some excellent hypnotic subjects do not seem to engage in such novelty generation, others evidently do. For example, the Experiential Analysis Technique (Sheehan and McConkey, 1982; McConkey, 1991; Sheehan, 1991) indicates that some highly hypnotizable subjects are quite cognitively active, devising sometimes fairly complex strategies in the face of the challenges posed by suggestions. To illustrate, McConkey *et al.* (1989) performed a detailed analysis on two hypnotic virtuosos and found that whereas one reported that the effects suggested by the hypnotist just happened passively by themselves, the other reported using a variety of cognitive strategies to respond to suggestions. Although the passive experience style of hypnotic responding is more consistent with the original formulation of dissociated control, the cognitively active style is more consistent with second-order dissociated control theory.

Second-order dissociated control theory maps beautifully onto the neuropsychological model of cognitive control developed by Cohen and his colleagues (Cohen *et al.*, 2004). This model distinguishes between the two levels of control in the executive system. The first is implemented by goal representations in the prefrontal cortex that enable nonroutine responses. The second is implemented by attentional monitoring that enables the adjustment of control based on the detection of interference or conflict in the processes being influenced by the currently active representations. This conflict-monitoring function is subserved by the ACC (Botvinick *et al.*, 2001; Kerns *et al.*, 2004; Ridderinkhof *et al.*, 2004), which provides feedback for appropriate control adjustments. In particular, conflict detection serves as a signal to strengthen further the bias in appropriate task-relevant subsystems. Such recruitment of control resources is subserved by the left dorsolateral prefrontal cortex (Botvinick *et al.*, 2004). Thus, this conflict-monitoring model of cognitive control distinguishes between executive monitoring and executive control, and locates major aspects of these functions anatomically.

MacDonald *et al.* (2000) developed a methodology using the Stroop task and functional magnetic resonance imaging (fMRI) so that they could separately measure the *cognitive-control* function of the dorsolateral prefrontal cortex and the *conflict-monitoring* function of the ACC. Egner *et al.* (2005) used this paradigm to examine changes in cognitive control in hypnosis. Consistent with previous work by MacDonald and colleagues, they identified conflict-related activation in the ACC by contrasting high versus low response conflict conditions (color-naming incongruent trials versus, for example, word-naming congruent trials). Likewise, they identified demand-for-control activation in the left dorsolateral prefrontal cortex by contrasting high versus low control conditions (color-naming trials versus word-naming trials).

For the regions of the ACC most sensitive to response conflict, Egner *et al.* (2005) found a statistically significant interaction of hypnotizability and hypnotic condition. Hypnosis increased conflict-related activation for the high hypnotizable individuals, but not for their low hypnotizable counterparts. The researchers interpreted this finding as showing decreased efficiency of the cognitive control system for the high hypnotizables under hypnosis, strongly consistent with the original version of dissociated control theory. However, they found no differences between high and low hypnotizable individuals in demand for cognitive control, as indexed by activation in the left dorsolateral prefrontal cortex. Thus, there seemed to be no difference in executive control, which is somewhat inconsistent with the original version of dissociated control theory.

The cause of the lack of difference in executive control was elucidated by an EEG component of the study by Egner *et al.* (2005). They examined coherence, a measure of functional connectivity, between the left frontal and frontal midline recording sites, reflecting electrophysiological activity in the left lateral prefrontal cortex and ACC, respectively. In this way, they were able to assess the degree of integration between executive control and executive monitoring functions. The results indicated that in highly hypnotizable individuals under hypnosis, there is a breakdown in the integration of these functions during ongoing cognitive control.

This finding strongly supports what we have called second-order dissociated control theory. Specifically, for highly hypnotizable individuals under hypnosis, the increased conflict-related activation in the ACC indicates mismatch of executive control with task demands, yet this mismatch fails to modulate ongoing demands for cognitive control in the dorsolateral prefrontal cortex.

The neural underpinnings of second-order dissociated control theory crucially involve the ACC. Increased activation in the ACC is the most consistent finding in brain imaging studies of hypnotic suggestions and the hypnotic state (e.g. Rainville *et al.*, 1997, 2002; Crawford *et al.*, 1998; Szechtman *et al.*, 1998; Faymonville *et al.*, 2000; Derbyshire *et al.*, 2004). However, the regions within the ACC that are activated differ somewhat across these studies. Jamieson and Woody (2007) have related these findings to recent research examining the integration of the affective functions of the ACC with its conflict-monitoring functions. The dorsal regions of the ACC appear to specialize in the detection of conflict, and this information is subsequently evaluated in more rostral regions of the ACC for its relationship to motivationally relevant outcomes. This evaluative monitoring, in turn, may then trigger adaptive changes in cognitive control.

However, any such tidy picture of how the ACC is related to hypnotic responding is complicated by the findings of Raz *et al.* (2005). They found that a post-hypnotic suggestion to perceive words as nonsense strings led to decreased activity in the ACC during a Stroop task, suggesting superior conflict resolution (see also Sheehan *et al.*, 1988; Raz *et al.*, 2002). Thus, with appropriate hypnotic suggestions, the cognitive control of highly hypnotizable individuals appears to be quite malleable.

In summary, second-order dissociated control theory focuses on breakdown in integration between executive functions within anterior regions of the brain, rather than breakdown in integration between anterior and subcortical or posterior regions, as implied by the original version of dissociated control theory. In addition, it paints a rather different picture of the highly hypnotizable person in hypnosis. It suggests that, rather than being frontally challenged, as implied by the original dissociated

control theory, highly hypnotizable individuals can set up unusual cognitive control programs and then sustain them in a quasi-perseverative fashion, whereas for low hypnotizables such strategies would be overturned by conflict monitoring.

This idea has broad applicability to hypnotic phenomena. For example, consider the hypnotic suggestion that one's arm is rigid like a bar of iron and one cannot bend it, despite the effort to do so. Both high and low hypnotizables can imagine and attempt to enact this suggested state of affairs, but for low hypnotizables conflict monitoring would feed in information indicating that reality, in the form of the state of one's arm muscles, is inconsistent with this imagined state of affairs. Thus, for them the suggestion never becomes more than a tenuous imagining. In contrast, according to second-order dissociated control theory, high hypnotizables are relatively unaffected by such reality testing (i.e. is the state of one's muscles actually consistent with the attempt to bend one's arm?). Therefore the actual state of their arm does not interfere with the phenomenological qualities of the suggested experience. In short, the dissociation of conflict monitoring from cognitive control unhooks the highly hypnotizable subject to some extent from the constraints of reality.

Second-order dissociated control theory, with its emphasis on the isolation of control from executive monitoring, may provide an interesting perspective on other empirical findings in hypnosis research. To illustrate, Bryant and Wimalaweera (2006) found that during hypnosis the attempted suppression of an embarrassing thought led to its increased accessibility in low hypnotizable participants, but not in highs. Because such accessibility stems from an underlying monitoring process (Wenzlaff and Wegner, 2000), these results are consistent with the hypothesis that during hypnosis, monitoring is dissociated from control in highly hypnotizable individuals.

4.5. Conclusion

It remains to be seen whether one of the foregoing dissociative mechanisms will prevail over the others in future research. An alternative possibility, as originally favored by Hilgard, is

to conceptualize hypnosis in terms of a fluid plurality of dissociative mechanisms.

Understanding hypnosis involves tough issues such as, how does volition work, and what is the nature of awareness? It also touches on philosophical problems such as, how does one know what is real, and what is free will? In short, hypnosis seems to lie at the crossroads of some of the most challenging problems in comprehending the nature of the mind. Thus, although understanding hypnosis is difficult, it is also potentially rewarding for its promise of illuminating a much broader range of human behavior.

However, the empirical literature on hypnosis is immense, diverse and contradictory. The only hope for welding this mass into something truly enlightening is the development of stronger theory. In an interesting discussion of how results in the social sciences are confusing and misleading in the absence of strong theory, Hirsch (2002) quotes the eminent physicist Pauli, who once quipped about a scientific paper, 'It is not even wrong'. Dissociation theories of hypnosis are at least wrong. And in some ways they may turn out to be right.

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CHAPTER 5

Social cognitive theories of hypnosis

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5.1. Introduction

On the face of it, a person's experience during hypnosis is quite amazing. Many people report that ordinarily unremarkable actions such as lifting a hand have a startling involuntary quality; they experience unusual changes in sensations such as pain; they see things that are not present, and do not see things that are present; they feel that time is slowing down or speeding up; and they display the curious inability to recall the events of hypnosis when amnesia is suggested to them. Indeed, from a social cognitive perspective, hypnosis might well be defined as a situation in which people respond to imaginative suggestions of this sort, regardless of whether a formal hypnotic induction or even the term 'hypnosis' have been used (Hilgard, 1973; Kirsch, 1997, 2003). These sorts of changes in thoughts, feelings, actions and sensations appear to be so out-of-the-ordinary that they clearly imply that something extraordinary happens during hypnosis (e.g. Hilgard, 1965; Spiegel and Spiegel, 1978; Erickson, 1980; Edmonston, 1981; Spiegel, 1998). Indeed, for more than 200 years, the dominant view of hypnosis is that it activates special abilities, produces a trance or profoundly altered state of consciousness and compromises a person's sense of agency.

For more than a century, it was assumed that a trance or altered state of consciousness is

responsible for the seemingly remarkable effects of hypnosis. In these early theories, it was assumed that the trance state was a necessary precursor for the production of hypnotic experiences and behaviors, so much so that the presence of a trance was inferred from the presence of the behaviors. Thus, hypnotized subjects showing hallucinations were assumed to be in a deep trance, whereas those who only responded to easier suggestions were assumed to be in a lighter trance.

The traditional trance explanation of hypnosis was challenged by the results of the first sustained series of experimental studies of hypnosis (Hull, 1933). In Hull's studies, the exact same hypnotic suggestions were given with and without induction of hypnosis. These experiments revealed that the effect of inducing hypnosis is relatively small—'probably far less than the classical hypnotists would have supposed had the question ever occurred to them' (Hull, 1933, p. 298)—and that hypnotic and nonhypnotic suggestibility is very highly correlated. Hull's research has since been replicated in several other laboratories (Weitzenhoffer and Sjöberg, 1961; Barber and Glass, 1962; Hilgard and Tart, 1966; Tart and Hilgard, 1966; Braffman and Kirsch, 1999, 2001), all using the same basic design and yielding the same basic results. In all of these studies, waking or nonhypnotic suggestibility was defined as

responsiveness to imaginative suggestions without a prior hypnotic induction, whereas hypnotic responsiveness was defined as responsiveness following an induction. Conceptually, hypnotizability is the difference between waking and hypnotic suggestibility (see Hilgard, 1965; Weitzenhoffer, 1980), but it is rarely measured in this manner (for exceptions, see Braffman and Kirsch, 1999, 2001).

Hull's (1933) interpretation of his data retained the notion of the hypnotic trance as an explanatory or causal factor, but limited its impact to the relatively small increase in suggestibility that is produced by the hypnotic induction. As Hull phrased it, 'no phenomenon whatever can be produced in hypnosis that cannot be produced to lesser degrees by suggestions given in the normal waking condition' (Hull, 1933, p. 391). The essential question, as Hull saw it, was to establish why the hypnotic trance produced this effect. This view of hypnosis was later echoed by Hilgard (1965) in his altered state theory of hypnosis, and was supported by a series of studies showing that un hypnotized suggestible subjects can respond even to the most difficult suggestions for cognitive and perceptual alterations (Glass and Barber, 1961; Weitzenhoffer and Sjoberg, 1961; Barber and Glass, 1962; Hilgard and Tart, 1966). More recently, however, some theorists have resurrected the idea that at least some hypnotic responses cannot occur without the induction of a hypnotic state (e.g. Spiegel and Spiegel, 1978; Gruzelier, 1998; Kosslyn *et al.*, 2000; Kallio and Revonsuo, 2003).

In the 1950s and 1960s, social cognitive theorists (Sarbin, 1950; Barber, 1969) began to elucidate an alternative understanding of hypnosis, one that rejected the idea that a special state of consciousness is needed to explain either the experience of hypnotic suggestions or the increase in suggestibility following the induction of hypnosis. They also rejected the idea that one can infer the presence of a trance state from responses to hypnotic suggestions. Hypnotic responding is widely considered an ability. In that sense, it is similar to the ability to solve mathematical problems or accomplish other cognitive tasks. One does not infer that people are in a mathematical state when they succeed in solving difficult problems or that they are in an intelligent state if they score well on an IQ test. Olympic jumpers are not

in jumping states, and good typists do not have to enter typing states before they can type successfully. The poetry of Shakespeare, the symphonies of Beethoven, the landscapes of Cezanne and the sculpture and architecture of Michelangelo can produce profound and compelling emotional experiences in aesthetically sensitive people. They do so without prior induction of an aesthetic trance, and we do not infer that there is an aesthetic state which is a necessary precursor of those experiences. For the same reason, one cannot logically infer the presence of a trance state from successful hypnotic responding.

From a social cognitive perspective, the experience of being in a trance is merely a response to suggestion, just like all of the other responses to suggestion that occur during hypnosis. Specifically, it is a response to a suggestion to become hypnotized, a suggestion that is termed a hypnotic induction (Wagstaff, 1998). It is for this reason that nonstate theorists (e.g. Kirsch, 1997) have endorsed Hilgard's (1973) proposal that the domain of hypnosis can be defined without reference to the induction of an altered state. If this were accepted, the distinction between waking suggestibility and hypnotic suggestibility would disappear.

Nevertheless, it is clear that hypnosis is not synonymous with suggestion. There are various types of suggestion that lie outside of the domain of hypnosis (for more, see Tasso and Perez, Chapter 11, this volume). What differentiates hypnotic suggestion from other types of suggestion is not the presence of a hypnotic induction, but the type of suggestions that are administered (see Kirsch, 2003; Kihlstrom, Chapter 2, this volume). Unlike placebos, misleading questions and other forms of indirect suggestion, hypnotic suggestions are requests for imaginative experiences, and for that reason they can also be termed *imaginative suggestions* (Braffman and Kirsch, 1999). They are suggestions for changes in experience independent of any changes in the world. When placebos are given, recipients are led to believe that the pill contains an active substance that it does not in fact contain. Leading questions imply that something that did not happen has in fact occurred. In contrast, hypnotic suggestions are not aimed at convincing the subject that something external is different from what it actually is.

Instead, they are aimed at producing compelling subjective experiences even if they are at variance with what the subject knows to be the actual state of affairs. In the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer and Hilgard, 1962), for example, subjects are told ‘*imagine* that you are holding something heavy in your hand ... maybe a heavy baseball or a billiard ball’ (p. 17, emphasis added), and ‘*imagine* that you have something sweet tasting in your mouth, like a little sugar’ (p. 19). There is no attempt to convince subjects that there really is something heavy in their hands or that there really is sugar in their mouths.¹ Instead, the hypnotist says, ‘the hand and arm feel heavy, *as if* the weight were pressing down’ (p. 17) and ‘you are now beginning to have a *sour* taste in your mouth ... *as if* you have some lemon in your mouth’ (p. 20). Thus, the essence of hypnotic suggestion involves having subjects experience the world ‘as if’ the suggested state of affairs were true, and when asked, most highly responsive subjects report knowing that nothing in the external world has actually changed (Coney and Kirsch, 1999).

Hypnosis theories are often dichotomized into state and nonstate theories, with social cognitive theories being the most prominent exemplars of nonstate theories. During the 1960s and 1970s, the altered state issue was acknowledged to be the most contentious issue in the field (Sheehan and Perry, 1976). Despite various pronouncements of convergence in the altered state debate (Spanos and Barber, 1974; Kirsch and Lynn, 1995), the controversy continues to simmer, if not boil. Some proponents of the altered state view have claimed that neurophysiological evidence for the neurological substrates of hypnosis is so compelling that the debate as to whether hypnosis is an altered state is no longer an issue to be resolved. For example, Gruzelier’s (1996) review of the psychophysiological concomitants of hypnosis concluded, ‘We can now acknowledge that hypnosis is indeed a “state” and redirect energies earlier spent on the “state–nonstate debate”’

¹ Hypnotic suggestions are sometimes worded as if the suggested state of affairs was real, but the cultural context, the initial explanation of hypnosis and the wording of prior suggestions make it clear that they are to be interpreted metaphorically.

(p. 315; see also Barabasz and Barabasz, Chapter 13, this volume).

We and other social cognitive theorists (e.g. Wagstaff, 1998) do not deny the possibility that reliable physiological markers of an altered state of hypnosis may one day be found, and underscore the importance of identifying the psychophysiological substrates of hypnosis. However, we have argued elsewhere (Lynn *et al.*, 2007), as we will in this chapter, that the claim that neurophysiological data resolve the altered state issue is not warranted by the available evidence.

There are a number of prominent hypnosis scholars whose positions on the state–nonstate issue do not fit this dichotomy easily (McConkey, 1991, Chapter 3, this volume; Sheehan, 1991; Brown and Oakley, 2004; Kihlstrom, Chapter 2; Woody and Sadler, Chapter 4, this volume). Kihlstrom (1985), for example, retains the altered state terminology, but uses it in a strictly descriptive sense, assigning no causal properties to it. According to what has been referred to as a weak interpretation of the altered state hypothesis (Kihlstrom, 1985), the hypnotic state is merely a descriptive term or label for the changes in consciousness, rather than a causal factor in the production of hypnotic experience. As in social cognitive theories, these experiences are deemed to be social psychological and cognitive processes. Thus, except for the preference for state terminology as a descriptor, these theories can also be considered as social cognitive in nature.

In this chapter, we review the social cognitive theories of hypnosis. We begin with an overview of the social cognitive perspective. However, neither state nor nonstate theories of hypnosis are monolithic. Because there are a number of differently nuanced social cognitive theories of hypnosis, we will review them before we consider how social cognitive theorists have studied and conceptualized hypnotic phenomena that traditionally have been attributed to an altered state of consciousness.

5.2. Conceptions and definitions

The conceptual roots of the social cognitive perspective can be traced to the writings of Robert

White (1941), which first emphasized the goal-directed nature of hypnotic responding. According to White, 'Hypnotic behavior is meaningful, goal-directed striving, its most general goal by the subject being to behave like a hypnotized person as this is continuously defined by the operator and understood by the subject' (p. 483). However, unlike the social cognitive theorists who followed him, White continued to believe that hypnotic behavior was linked to an altered state of consciousness accompanied by subtle cognitive changes (for more discussion of White, see McConkey, Chapter 3, this volume).

The social cognitive theorists we review, while differing in emphasis and focus, share the assumption that hypnotic experience and behavior is similar to other complex social behaviors in a number of salient respects. More specifically, individuals who experience hypnosis, like their nonhypnotized counterparts, act in terms of their aims, according to their point of view, and in relation to their interpretation of appropriate behavior and feelings (Lynn and Rhue, 1991). Responses during hypnosis are goal directed—they are regulated in terms of participants' self-perceptions, needs and intentions, and can be progressively changed to realize goals. How participants respond to the following sorts of questions affects their willingness to respond to hypnotic procedures, as well as their unique experiences during hypnosis: 'What will happen if I am hypnotized?' 'What am I expected to do?' 'Do I have anything to fear?' 'What will it say about me if I respond to the hypnotist ... that I am weak minded, imaginative or open to experience?' Accordingly, rather than being robotic responders, people who experience hypnosis strive to: (1) make sense of what is required of them in order to respond in keeping with their understandings of what is appropriate to think, feel and do during hypnosis; and (2) actively create the experiences called for by suggestions (e.g. see Spanos, 1986; Kihlstrom, Chapter 2; McConkey, Chapter 3, this volume).

Hypnotic responses are the product of diverse cultural, personal and interpersonal influences. Hypnosis occurs in an historically derived cultural context, to which particular meanings have been attached. Survey data (McCord, 1961; McConkey, 1986; Wilson *et al.*, 1986; Green *et al.*, 2006) consistently indicate that common conceptions of hypnosis typically include the

following beliefs: (1) hypnosis is an altered state of consciousness; (2) the hypnotist is a powerful figure; (3) hypnotizable subjects are passive and receptive; and (4) hypnotic suggestions are carried out automatically or effortlessly. These widely prevalent notions of hypnosis, along with specific suggestions that spell out the experiences or actions called for, provide the scaffolding for how participants respond to hypnosis. Responsive participants are thus invested in meeting the requirements of what they perceive to be the hypnotic role. Yet their responses do not reflect mere compliance or role playing absent genuine experiences of suggested events.

Hypnotized subjects never truly lose control of their actions during hypnosis. Rather, they attune their experiences and actions to the broad demands of the situational context and the implications of the imaginative suggestions they receive to interpret some of their suggestion-related responses as involuntary 'occurrences.' Finally, social cognitive theorists do not dispute the fact that profound alterations in consciousness can and often do occur during hypnosis. They differ from traditional state theorists, however, in that they consider the feeling of an altered state as merely one of the many subjective effects of suggestion. They do not consider these feelings as indicative of an actual trance state that is either a prerequisite for the experience of any other suggested effects (e.g. James, 1890; Kallio and Revonsuo, 2003) or that enhances suggestibility (e.g. Hull, 1933; Hilgard, 1965). Instead, they explain the response-enhancing effect of the hypnotic induction as a function of enhanced motivation and expectancy (e.g. Barber, 1969; Braffman and Kirsch, 1999).

The name social cognitive captures this perspective's emphasis on social psychological and cognitive variables as determinants of hypnotic responsiveness. Social cognitive theories encompass theories that have variously been termed social psychological, social cognitive and cognitive-behavioral. A guiding assumption is that all of the phenomena of hypnosis, including behavioral responses to suggestion, and subjective responses to suggestion, such as the subjective experience of a trance state, can be accounted for without postulating any special underlying state or condition. From this perspective, hypnotic experiences, like many other

complex social experiences, are a product of diverse factors that encompass abilities, attitudes, beliefs, expectancies, attributions and interpretations, the relationship in which the behaviors unfold, and the way people wish to present themselves to others. Accordingly, social cognitive theorists and researchers seek explanations for puzzling and seemingly remarkable hypnotic behavior in mundane terms, and seek to apply rigorous experimental procedures to identify important determinants of suggestibility and rule out competing theoretical explanations for hypnotic phenomena.

5.2.1. The role of compliance

Spiegel (1998) claimed that social cognitive theorists ‘... see hypnosis as nothing more than a minor variation on the theme of social compliance’ (Sarbin and Coe, 1972; Coe, 1978) and that the ‘fundamental factor involved in hypnosis is a general and widely distributed human tendency to comply with social pressure’ (p. 233). Although this characterization of social cognitive theories is not uncommon, it is nevertheless mistaken. If hypnosis were nothing more than compliance or faking, it would not be of much interest to anyone. Hypnosis is interesting to social cognitive theorists precisely because of the ‘believed in’ subjective alterations it produces. Indeed, social cognitive theorists have studied a gamut of hypnotic phenomena (e.g. suggestion-related involuntariness, trance logic, analgesia) that involve alterations in sensations, perceptions and cognitions.

Social cognitive theorists differ in the role they accord to compliance. All social cognitive theorists have acknowledged that many, if not all, co-operative participants do their best to experience the subjective effects of hypnotic suggestions and, for the most part, succeed in this endeavor. Relative to other social cognitive theorists, Wagstaff (1991, 1998) has accorded compliance the greatest role in hypnotic responding. Nevertheless, Wagstaff has argued that before participants will comply with a hypnotic suggestion in the absence of a genuinely felt subjective response, they will first attempt to ‘try to work out what is appropriate to the hypnotic role or what is expected of them’ and then ‘apply cognitive strategies or activities to make the experiences veridical or ‘believable’ (p. 29).

It is only after these strategies to experience the suggested event as subjectively compelling fail that they are replaced by attempts to comply behaviorally or ‘sham’. Relatedly, Spanos (1991) claimed that ‘compliance, in and of itself, cannot account adequately for hypnotic behavior’ (p. 336). Indeed, social cognitive researchers have shown conclusively that hypnosis cannot be reduced to mere compliance or faking (Kirsch *et al.*, 1989; Perugini *et al.*, 1998).

The surreptitious observation of hypnotized individuals provides the most persuasive evidence that people who respond to suggestions are not faking. In an attempt to ascertain the role of demand characteristics in accounting for hypnotic behavior, Evans and Orne (1971) devised the disappearing hypnotist scenario. Two types of subjects are involved. The first type is highly suggestible individuals who receive no particular instructions about how to respond. The second type of subject is selected for their inability to experience the effects of hypnosis, and is instructed to role-play or simulate the performance of a good hypnotic subject. This scenario consists of the following elements: (1) after a hypnotic induction, the hypnotist must leave due to an emergency; (2) after the hypnotist leaves, the subjects (both hypnotized and simulating) are surreptitiously observed to determine how long they remain hypnotized; and (3) after the experiment is completed, the behaviors of the hypnotized and simulating subjects are compared. Evans and Orne observed that simulating subjects usually stopped simulating when left alone, whereas hypnotized subjects continued to act like they were hypnotized for several minutes, suggesting that they continued to experience the effects of hypnosis and were not merely faking or role-playing, as was the case with simulators.

To extend these findings, Kirsch and his colleagues (Kirsch *et al.*, 1989; Perugini *et al.*, 1998) developed the surreptitious observation design. While under the impression that they were alone and unobserved, simulating and hypnotized subjects listened to audiotaped hypnotic suggestions, while the researchers secretly observed them. Both groups also listened to the audiotapes while the researchers were present. Kirsch *et al.* found that when alone and unaware of being observed, simulators responded to

significantly fewer suggestions than when they were openly observed. Nonsimulating subjects, on the other hand, were not affected by the manipulation: they responded to the same number of suggestions regardless of the environment. This research supports the conclusion that suggestible subjects genuinely experience the effects of hypnotic suggestions. Clearly, there is much to explain about hypnotic responding beyond mere compliance, and a variety of social cognitive theories we will review next have provided accounts of hypnotic suggestibility, the determinants of subjective experiences during hypnosis, and hypnotic phenomena.

5.3. Genesis of our own point of view

Our point of view is deeply rooted in the theories and research of pioneers who sketched the broad themes of the social cognitive perspective: Theodore Sarbin and his long-time colleague, William Coe; T. X. Barber and his former students Nicholas Spanos and John Chaves, and the London psychologist, Graham Wagstaff. After we review major programs of research grounded in the social cognitive perspective, we will describe response set theory that we (Kirsch and Lynn) have developed over the past decade.

5.3.1. Sarbin's role theory

In 1950, Theodore Sarbin challenged the traditional concept of hypnosis as a state. Before this time, hypnosis was universally assumed to be an altered state. Although skeptical earlier theorists (e.g. Hull, 1933; White, 1941; Bernheim, 1987) understood hypnotic phenomena in ways that reduced the importance of this hypothesized altered state considerably, Sarbin (1950) was the first to reject it outright. Sarbin conceived of hypnosis as a form of social psychological behavior. He and his colleague William Coe (Sarbin and Coe, 1972; Coe and Sarbin, 1977) have used social psychological role theory to explain hypnotic behavior. They argued that hypnosis could be conceptualized as 'believed in imaginings', and developed a theory of hypnosis that relied heavily on the social psychological concept of role. Being a hypnotized subject is a social role, in the same way that being

a psychotherapist, client, teacher, student and parent are social roles. In order to be hypnotized, one must want to adopt that role. Once in the role, people's experiences are shaped by their perceptions of the role. Accordingly, people who are led to believe that hypnotized subjects display arm catalepsy, display that response when hypnotized (Orne, 1959). But it is not hypnosis that produces the response; it is the belief that this response is appropriate to the role of a hypnotized subject.

A distinction that is quite crucial to understanding Sarbin's theory, and social cognitive theories in general, is that between role-taking and role-playing. Sarbin used the term *role-taking* because role-playing in this context implies faking or pretending to experience hypnosis, whereas role-taking does not. Sarbin emphasized the degree to which 'some actors report losing themselves completely in certain roles so that they are relatively unaware of the audience or of other physical or social objects' (p. 260), and there is evidence from other areas of psychology that enacting a particular emotion or behavior can affect objective and subjective measures in the direction of the enactment (Cardena and Beard, 1996). Among other things, Sarbin used role theory to account for the experience of automaticity that characterizes many hypnotic responses. 'Role-taking is organismic', he maintained, 'it embraces the entire organism, not merely the voluntary reaction-systems' (p. 260).

To say that we enact the role of a parent does not imply pretence. Similarly, when people take on the social role of hypnotic subject, they are not merely pretending to be hypnotized. As Sarbin stressed, the imaginings that form the basis of hypnotic experiences are believed in by the hypnotized subject. In fact, honesty is part of the hypnotic role (Spanos, 1986). Most individuals display hypnotic responses behaviorally only when they are able to achieve the subjective experience called for by the suggestion. If they are deceiving anyone when they say that they cannot bend their arms following a suggestion for arm rigidity, it may only be themselves (Sarbin, 1989).

People differ in their role-taking ability. That is why some people are better actors than others. In fact, acting students respond better than

science students to hypnotic suggestions (Sarbin, 1950). The research of Sarbin and his colleagues (Sarbin and Coe, 1972; Coe and Sarbin, 1991) highlighted the contribution of the following variables to subjects' hypnotic responsiveness: (1) knowledge of what is required in the hypnotic situation; (2) self-and role-related perceptions; (3) expectations; (4) imaginative skills; and (5) situational demand characteristics. Sarbin (1950) explained individual differences as differences in the ability to become involved in the hypnotic role.

More recently, Coe and Sarbin (1991) elaborated the constructs of self-deception, secrets, metaphors and narratives in an expansion of their earlier role theory. Narrative psychology holds that human actions and self-perceptions are storied. People experience hypnosis in terms of a widely available script regarding what it is like to be hypnotized and how 'good' subjects respond in the situation. Nevertheless, understanding and enacting of the script will vary in terms of exposure to information about hypnosis, and subjects' goals and how they wish to present themselves. Accordingly, Coe and Sarbin's narrative or dramaturgical model underlines the motivated, active and constructive nature of hypnotic experiences and performances.

5.3.2. Barber's operational approach

Theodore X. Barber (1969) was influenced by Sarbin's theorizing and criticized the state concept because of its logical circularity (i.e. hypnotic responsiveness can both indicate the existence of a hypnotic state and be explained by it). If the presence of a hypnotic state is inferred from subjects' responses to test suggestions, then there is no way of demonstrating or falsifying the hypothesis that those responses are dependent on that state.

Barber's operational approach to hypnosis was derived from logical positivism and neobehaviorism, whereas Sarbin's position was based on social psychological role theory. In place of Sarbin's deductive theoretical approach, Barber adopted an inductive strategy. In an extensive series of studies in the 1960s (Barber and Calverly, 1964; Barber, 1969) and early 1970s (Barber *et al.*, 1974), Barber and his colleagues

systematically examined primary classes of independent variables that might be functionally related to hypnotic behavior. As a result of this research, Barber concluded that hypnotic responses were related to the following eight antecedent variables associated with the hypnotic procedures and test suggestions: attitudes; expectancies; the wording and tone of suggestions; motivation; the definition of the situation as 'hypnosis'; suggestions for relaxation; the wording of the inquiry with which the response is assessed; and the behavior adopted by the experimenter.

Barber's initial experimental strategy was based on providing subjects with 'task motivational instructions'. Instead of listening to a hypnotic induction, subjects were told that their ability to imagine was being tested. They were strongly urged to co-operate with the experiment by actively imagining the suggested effects, and were told that others had been successful in doing so. Barber and his colleagues observed the effects of these instructions and compared them with the effects of a standard hypnotic induction; and across many studies, the effects of task motivational instructions were found to be comparable with those of hypnosis. This research supported the idea that despite external appearances, hypnotic responses were not particularly unusual, and therefore did not require the positing of unusual states of consciousness.

A frequent criticism of Barber's work has been that task motivational instructions may place greater pressure on subjects for compliance than is found in traditional hypnotic inductions. Task motivational statements such as 'everyone passed these tests when they tried', 'I want you to score as high as you can' and 'If you don't try to the best of your ability, this experiment will be worthless and I'll tend to feel silly' (Barber, 1969, p. 46) were seen as particularly problematic. Messages of this sort might lead some subjects to pretend to be more responsive than they actually are. Whether task motivational instructions are more likely than trance inductions to result in faked responses is not yet known. However, other methods of duplicating the effects of trance inductions on suggestibility have been devised, methods that do not involve the high pressure statements contained in task motivational instructions (e.g. Council *et al.*, 1983).

It is possible, of course, that different procedures (trance inductions, task motivational instructions) produce the same effects by way of different mechanisms. But if this is the case, then it remains to be empirically demonstrated. Until it is, parsimony demands that we assume a common mechanism. As argued above, there is no reason to believe that task motivational instructions create an altered state of consciousness. Nevertheless, they are as effective as trance inductions in enhancing suggestibility. Therefore, the existing data indicate that the notion of a special state of consciousness is not needed in order to account for hypnotic phenomena.

The conclusion that alterations in conscious state are not causes of increased suggestibility does not mean that these changes in conscious state do not exist. Following a hypnotic induction, many people report that they feel themselves to be in an altered state, although most responsive subjects reject this idea and instead describe hypnosis as a 'normal state of consciousness that simply involves the focusing of attention' (McConkey, 1986, p. 314). There is no reason to doubt the truthfulness of the substantial minority who do report experiencing an altered state. But, rather than being a cause of other hypnotic phenomena, alterations in conscious state appear to be just one more effect of hypnosis, as much in need of explanation as hand levitation, catalepsy, amnesia, and other directly and indirectly suggested effects.

More than any other social cognitive theorist, Barber (Wilson and Barber, 1981, 1983) emphasized individual differences in fantasy proneness and imaginative ability as determinants of hypnosis. Barber (1999) recently put forward the intriguing hypothesis that individuals may have distinct styles of responding to hypnotic suggestions, such that some individuals respond primarily in terms of their positive response set, whereas perhaps a much smaller percentage of individuals become more imaginatively or dissociatively (e.g. experience spontaneous amnesia) involved with suggestions. Barber's formulation is open to the question of the extent to which dissociative and highly imaginative individuals' excellent hypnotic performance is influenced by situational cues and social psychological variables (e.g. attitudes, beliefs, expectancies).

5.3.3. Spanos's multifactorial model

Nicholas P. Spanos (1986) extended Sarbin's role theory and Barber's cognitive-behavioral theory into one of the most influential contemporary theoretical approaches to the understanding of hypnotic behavior. Spanos and his colleagues (Spanos, 1986, 1991; Spanos and Chaves, 1989) focused on the importance of social psychological processes and the importance of goal-directed activities and strategic responding. Like his mentor T. X. Barber, Spanos advanced a multifactorial model of hypnotic suggestibility that acknowledged the role of attitudes, beliefs, imaginings, attributions and expectancies in shaping hypnotic phenomena. Extending Sarbin's role theory, and White's observations about the goal-directed nature of hypnosis, Spanos (1991) used the construct of strategic role enactment to explain how individuals transform imaginings, thoughts and feelings into experiences and behaviors that are consistent with their ideas of how a good hypnotic subject should respond to the overall hypnotic context and specific suggestions in particular. How subjects construe the hypnotic role is thus a key determinant of hypnotic responsiveness.

Spanos chose the term 'enactment' to distinguish individuals' attempts to fulfill the perceived requirements of the hypnotic role from pretence or faking. The term 'strategic' captures the consistent emphasis in Spanos's research program on identifying cognitive strategies that individuals employ to create suggested effects. For example, in order to reduce pain in response to an analgesia suggestion, subjects may use a variety of attentional strategies (e.g. distraction) to attenuate their subjective responses to painful stimuli.

Relatedly, suggestions often contain strategies that assist individuals in responding appropriately (Barber *et al.*, 1974; Spanos and Barber, 1974; Spanos *et al.*, 1985; see also Wagstaff, 1991, 1998). Raising the hand following suggestions for the hand to lift occurs as the subject imagines along with suggestions worded to imply that the hand will lift involuntarily (e.g. 'Your hand is getting lighter and lighter, it will rise by itself'). Spanos (1971) hypothesized that subjects tend to define their overt response to suggestion as involuntary when they become absorbed in goal-directed fantasies (GDFs).

GDFs are defined as 'imagined situations which, if they were to occur, would be expected to lead to the involuntary occurrence of the motor response called for by the suggestion' (Spanos *et al.*, 1977, p. 211). For instance, persons administered a hand levitation suggestion would exhibit a GDFr (i.e. goal-directed fantasy report) if they report such events as imagining a helium balloon lifting their hand, or a basketball being inflated under their hand.

Studies have indicated that GDFrs are related to the tendency to define overt response to suggestion as involuntary occurrences. However, GDFrs are not necessarily correlated with the number of suggestions that subjects pass on a suggestibility scale (for a review, see Lynn and Sivec, 1992). In fact, several studies indicate that such fantasies may even diminish responding to suggestions (Hargadon *et al.*, 1995; Comey and Kirsch, 1999). Why is this the case? Spanos argued that certain individuals can be fully absorbed in GDFrs yet passively wait for a suggested event, such as the lifting of an arm in response to a hand levitation suggestion, to 'happen.' Adopting this response set virtually guarantees failure. In contrast, individuals who understand that it is important to lift their arm will succeed in passing the suggestion. In short, how suggestions are interpreted is an influential determinant of whether or not they are accompanied by behavioral responses to suggested events.

One of Spanos's most important contributions has been to highlight the fact that hypnotic responsiveness is malleable and can be substantially modified and enhanced. According to Spanos, hypnotic responsiveness is not an immutable trait or propensity locked in at birth. Rather, it can be substantially modified by teaching subjects to do the following: (1) physically enact responses, as opposed to waiting passively for the suggested effects to happen to them (Spanos, 1986); and (2) use goal-directed imagery or fantasies

In more than 15 studies (see Gorassini and Spanos, 1999), Spanos showed that between 50 and 80 percent of initially low hypnotizable subjects who underwent a multifaceted cognitive skill training program (termed the Carleton Skills Training Program; CSTP) scored as high hypnotizables at post-testing. The training program includes the following

components: (1) information to instill positive motivation, beliefs, attitudes and expectations about responding to hypnotic suggestions; (2) instructions regarding how to use imaginal strategies to promote successful responding; (3) instructions regarding how to interpret suggestions (e.g. one must actually lift the hand while imagining that it is rising by itself); (4) exposure to a videotaped model who enacts successful responses to suggestions and verbalizes imagery-based strategies to facilitate subjective response; and (5) practice in responding to test suggestions. Spanos (March 6, 1985, personal communication) also noted that the training program encourages rapport with the trainer/hypnotist.

Not only have treatment effects been of large magnitude, but they also persist for an average of two and a half years after training (Spanos *et al.*, 1988a), and generalize to novel, demanding test suggestions (e.g. Spanos, 1986). Research in Spain (Cangas and Perez, 1998), Poland (Niedzwieska, 2000) and the UK (Fellows and Ragg, 1992) provided cross-cultural support for the effectiveness of the CSTP. Finally, treatment-related gains are maintained even when tested in an entirely novel test context in which subjects fail to connect their earlier training and subsequent hypnotizability testing. Research that addressed this latter issue (Zivney and Lynn, 1996) provided strong evidence that large magnitude treatment gains cannot be attributable to simple compliance effects. Combined, these findings constitute strong support for Spanos's model and challenge the received wisdom that hypnotic responsivity is a trait-like, stable attribute that can be modified only within narrow limits (for more discussion of the CTSP and modifiability of hypnotizability, see Laurence *et al.*, Chapter 9, this volume).

Spanos and his colleagues devoted substantial effort to testing hypotheses derived from Hilgard's neodissociation theory (Hilgard, 1977). The hidden observer phenomenon is integral to Hilgard's (1977) neodissociation theory, according to which all hypnotic experiences and responses are instances of dissociation. That is, they reflect a division of executive cognitive functioning into two parts, divided by an amnesic barrier. One part of consciousness (the hidden part) directs the person's behavior and experiences stimuli normally, but the other is

unaware of self-agency and experiences stimuli in a manner that is consistent with suggestions.

Hilgard (1973) serendipitously discovered the hidden observer phenomenon in a class demonstration of hypnotic deafness with a blind person. Hilgard's curiosity was aroused regarding whether a person who received a suggestion for complete deafness might be still aware of what was going on in his surroundings, despite his lack of startle response to loud noises. He told the person that, 'Although you are hypnotically deaf, perhaps there is some part of you that is hearing my voice and processing the information. If there is I should like the index finger to rise as a sign that this is the case' (Hilgard, 1994, p. 34). The person's finger rose as requested, despite his denial of hearing anything. Post-hypnotic inquiry revealed that the 'separate part' had been aware all along of everything that had been taking place.

This demonstration inspired many studies of the hidden observer. Hidden observers were obtained in association with hypnotic suggestions for analgesia to experimental pain, deafness, negative hallucinations (i.e. not seeing something that is there) and ideomotor responses (reviewed in Kirsch and Lynn, 1998; also see Green *et al.*, 2006). The basic paradigm of these studies is to select individuals who have demonstrated high levels of hypnotic suggestibility, tell them that there is (or may be) a hidden part of them that is more aware than their hypnotized part, establish a cue for communicating with the hypnotized part, administer a suggestion, and assess its effects with and without the hidden observer cue. Typically, hidden observers report higher levels of pain, less deafness and less blindness when the hidden observer cue is given. These hidden observer reports are interpreted as responses from the 'normal (i.e. not hypnotized) part' of the executive ego, the part that is fully experiencing stimuli and remembering information that is temporarily unavailable to the 'hypnotized part' of consciousness.

For the hidden observer to constitute empirical support for neodissociation theory one must assume that it reveals a hidden part of consciousness that is present during hypnosis, independently of the subject's expectations and the instructions used to communicate with it.

However, Spanos and his colleagues reported data in which hidden observer reports were affected by the nature of instructions given to subjects, leading these authors to the conclusion that the hidden observer is an experimental creation.

In the first of these studies, Spanos and Hewitt (1980) provided two groups of highly suggestible subjects with very different information about the hidden observer. One group was provided with information modeled on Hilgard *et al.* (1975) that conveyed the expectation that the hidden part would give accurate pain reports. Other subjects were informed that the hidden part was 'so deeply hidden' that it would experience even less pain than the hypnotized part. These two different sets of instructions elicited hidden observers with opposite characteristics (i.e. high sensitivity versus greatly reduced sensitivity to pain). Spanos and his colleagues (Spanos *et al.*, 1983) later replicated this effect using a within-subject manipulation. As instructions shifted to convey different expectations regarding the characteristics of the hidden observer, the same subjects reported either less hidden pain than overt pain or more hidden pain than overt pain.

Spanos *et al.* (1984a) produced two hidden observers in each of eight, highly suggestible, research subjects. The subjects learned a list of concrete and abstract words and then were given a suggestion to forget them. Half of the subjects were told that abstract words were stored by their right hemisphere and that concrete words were stored by the left. The remaining subjects received the opposite information concerning where information was stored. They were also told that there was a hidden part of them connected to each cerebral hemisphere. When the hypnotist contacted the 'hidden observer' associated with the right and left hemispheres, the subjects were able to recall the information that they had been told was stored there. That is, when the hypnotist contacted the right hemisphere 'hidden part', the subject recalled all of the words purportedly stored in the right hemisphere (e.g. concrete words), but none of the words stored in the left hemisphere (e.g. abstract words), and vice versa.

Spanos *et al.* (1988b) demonstrated a similarly flexible hidden observer in conjunction with suggested negative hallucinations. Previously,

Zamansky and Bartis (1985) had reported a study in which they had administered negative hallucination suggestions for subjects to see a blank page when the page actually had a clearly visible number imprinted on it. The authors found that all of the subjects who had initially denied seeing the number on the page claimed they had seen the number when the experimenter contacted their 'hidden observer'. Spanos *et al.* (1988) replicated this effect, using the number 18 as the stimulus that was not to be seen. However, half of the subjects were told that the hidden part reversed everything it saw. The results were clear-cut. Subjects' hidden observers reported what they had been told about the hidden observer: those who received typical hidden observer suggestions reported that the number was 18, whereas those told that the hidden observer reversed what it saw reported that they saw the number 81.

Most recently, Green and his colleagues (Green *et al.*, 2006) tested high and low suggestible role-playing (simulating) subjects for the amount of effort they experienced in responding to an arm suspension (i.e. ideomotor) task across baseline, hypnosis, hidden observer and post-session trials. Subjects were told that their hidden observer would be more aware of the effort required to complete the task; less aware; or they received no specific instruction concerning how their hidden observer should respond. The authors found that both real and simulating subjects' hidden observer reports of effort were influenced by the wording of the instructions they received.

Support for a social cognitive account of the hidden observer also stems from findings that the frequency of hidden or covert reports varies with the explicitness of the suggestions used to elicit the phenomenon. Studies in which highly suggestible subjects receive very explicit suggestions to report a hidden observer, or are given practice at performing the 'hidden tasks', have produced hidden observer response rates ranging from 82 to 94 percent (Knox *et al.*, 1974; Spanos and Hewitt, 1980; Mare *et al.*, 1994). This high rate of response contrasts sharply with hidden observer response rates ranging from 25 to 42 percent in studies of hypnotic analgesia and deafness in which less explicit instructions were used (Hilgard *et al.*,

1975; Crawford *et al.*, 1979; Laurence and Perry, 1981).

Spanos *et al.* (1983) tested the hypothesis that hidden observer response rates depend on the explicitness of the instructions by varying the saliency of the behavioral cues within the hidden observer suggestion. In research on overt and covert reports of pain, they found that only 14 percent of high hypnotizable subjects displayed hidden observers (i.e. generated discrepant overt and covert reports) under the low cue condition. In contrast, the high cue condition resulted in hidden observers in 58 percent of subjects. This suggests that the hidden observer may be a product of perceived situational cues.

Hidden observer studies indicate that hidden observer reports are exquisitely sensitive to situational demands produced by instructional cues. Depending on the instructions with which they are created, hidden observers report more or less pain than otherwise reported, they either do or do not reverse figures, and they report more or less effort associated with an ideomotor response. Accordingly, reports of 'hidden entities' appear to be byproducts of suggestions and contextual demands, rather than spontaneously occurring dissociated aspects of the personality (see Laurence *et al.*, 1983; Nogrady *et al.*, 1983; Kihlstrom, 1998, 2003, for a defense of the 'hidden observer', and a rebuttal by Spanos, 1991). Such findings led Kirsch and Lynn (1998) to dub the hidden observer a 'flexible observer'. Instead of being the basis for all suggested responses, the hidden observer appears to be a suggested response that can be considered part of the domain of hypnosis (for a different view of the implications of the hidden observer, see Woody and Sadler, Chapter 4, this volume).

5.3.4. Kirsch's response expectancy theory

Irving Kirsch's response expectancy theory (Kirsch, 1985, 1991, 1994) is a recent extension of social learning theory (Rotter, 1954). According to this theory, expectancies for changes in subjective experience can affect experience directly and generate nonvolitional responses. More specifically, response expectancies are anticipations of automatic

subjective and behavioral responses to particular situational cues, and they elicit automatic responses in the form of self-fulfilling prophecies.

This is best documented by the ability of placebos to produce changes in pain, anxiety, depression, tension, sexual arousal and other subjective states, as well as in the physiological substrates of the states. Similarly, hypnotic response expectancies can produce hypnotic experiences. Support for the important role of response expectancies in producing hypnotic responses is provided by studies of the nature of hypnotic inductions and the determinants of hypnotic responses. More specifically, Kirsch maintains that hypnotic inductions are expectancy modification procedures that produce placebo effects without the use of placebos. Historically, hypnotic inductions have encompassed a variety of procedures, including stroking subjects, clanging oriental gongs, flashing bright lights and applying pressure to subjects' heads. Although contemporary inductions often include suggestions for relaxation, relaxation is not a necessary component of hypnosis. In fact, the effect of 'alert inductions', such as when subjects pedal stationary bicycles (Banyai, 1991), are the same as those of traditional relaxation inductions (Banyai and Hilgard, 1976; Kirsch *et al.*, 1992).

Kirsch claims that the only common ingredient of these diverse inductions is the label hypnosis. When the effect of administering a drug is found to be independent of its specific ingredients (i.e. when an inert preparation produces the same effect), the drug is deemed to be a placebo. Similarly, hypnotic inductions must be expectancy manipulations, akin to placebos, because their effects on suggestibility are independent of any specific component or ingredient. In fact, it is possible to produce all of the suggestive effects of hypnosis by giving subjects a placebo and telling them that it produces a hypnotic state (Glass and Barber, 1961; Council *et al.*, 1983; Baker and Kirsch, 1993).

Not only do expectancies determine when hypnotic responses occur, they also play a large role in determining the nature of those responses. Following a hypnotic induction, subjects report increased or decreased involvement, time slowing down or speeding up, logical

thought becoming easier or more difficult, the hypnotist's voice sounding closer or farther away, sounds being clearer or more muffled, and so forth (Henry, 1985). Henry's data indicated that the direction of these alterations in awareness depended on the subject's preconceptions about the effects of hypnosis.

Kirsch (1991) identified expectancy and ability as two independent factors that determine hypnotic suggestibility, and this hypothesis has been supported empirically (Braffman and Kirsch, 1999; Benham *et al.*, 2006). Most of the correlations between expectancy and suggestibility are moderate, accounting for approximately 10 percent of the variance in responding. However, substantially higher correlations have been reported in some studies. Very high correlations between hypnotizability and expectancy are obtained when waking suggestibility is measured or when expectancy is assessed after the provision of a hypnotic induction (but before the administration of test suggestions). Interestingly, expectancy remains a significant predictor of hypnotic response even with waking suggestibility controlled (Braffman and Kirsch, 1999). In short, hypnotic responding following a trance induction is regarded as nonhypnotic responding with enhancements due to increased expectancy and motivation.

It is possible that expectancy is an epiphenomenon rather than a cause of responsiveness. More convincing evidence of causality is provided by studies in which manipulated expectancies produced changes in responsiveness. Three studies conducted in two separate laboratories have demonstrated that an experientially based expectancy manipulation can enhance responsiveness to hypnotic suggestion to an exceptionally large degree (Wilson, 1967; Wickless and Kirsch, 1989; Kirsch *et al.*, 1999). Indeed, one of these studies indicated that the effect of this expectancy manipulation was so strong that most subjects wound up scoring in the high range of responsiveness and none in the low range.

The influence of expectancies can be quite subtle. Tellegen and Atkinson (1974) originally conceptualized absorption as a trait-like capacity for absorbed and self-altering attention that 'represents an essential component of hypnotic

susceptibility' (p. 276). This conclusion was based on the finding that the measure of absorption they constructed, which was comprised of items associated with hypnotic suggestibility in previous studies, correlated with hypnotic suggestibility in two independent samples ($r = 0.27$, $P < 0.01$, $n = 142$; $r = 0.43$, $P < 0.001$, $n = 171$).

Council *et al.* (1986) hypothesized that expectancies moderate the modest relationship between hypnotic suggestibility and personality traits such as absorption. They argued that this relationship may be an artifact of the way these traits are measured, insofar as they routinely have been jointly administered in a hypnosis test context. This shared context of measurement was thought to establish a subtle expectation that the measures and abilities were related. When Council *et al.* measured hypnotizability and absorption in separate contexts, so that subjects did not associate or connect the two measuring instruments, no correlation between the measures was apparent.

The role of context effects has not gone unchallenged and has generated considerable controversy (e.g. Nadon *et al.*, 1991; see also Laurence *et al.*, Chapter 9, this volume). However, a meta-analysis (Council *et al.*, 1996) of 12 studies with almost 4,000 participants seems to place the research on context effects in perspective. When absorption and hypnotic suggestibility are administered in the same test context, their average correlation is 0.21. However, when measures of absorption and hypnotic suggestibility are administered in independent contexts (e.g. participants are led to believe they are participating in unrelated experiments), so that demand characteristics and context-based expectancies have no opportunity to mediate the results, the correlation is smaller (i.e. average $r = 0.12$). In short, the real association between absorption and hypnotic suggestibility is negligible, accounting for only 1 percent of the variance when the testing contexts are kept separate.

However, it bears mention that scores of fantasy-proneness, a measure highly related to absorption ($r = 0.70$), continue to correlate with hypnotic suggestibility even when the measures are administered in separate test contexts (Braffman and Kirsch, 1999). Of course, there is nothing inconsistent with ability

entering into the mix of the determinants of hypnotic suggestibility and a social cognitive perspective.

5.3.5. Lynn *et al.*'s integrative model

The integrative model of Steven Jay Lynn and his colleagues (Lynn and Rhue, 1991) is so named because it seeks to integrate situational, interpersonal and intrapersonal variables in accounting for individual differences in hypnotic responses, and it is integrative in the sense that hypnotized individuals creatively seek and integrate information from an array of sources in a goal-directed manner. The integrative model's central focus is on the general human capacity for creating psychological situations that engender desired experiences.

Lynn's model acknowledges the importance of affective, relational and rapport factors; individual differences; and unconscious determinants of hypnotic responsiveness (Lynn and Rhue, 1991; Lynn *et al.*, 1991). Rapport may facilitate hypnotic responding because it enhances subjects': (1) motivation to please the hypnotist, respond to role demands and develop an experiential set to respond to whatever is suggested (Tellegen, 1981); and (2) inclination to engage in compliant behavior. At the same time, when rapport is present, subjects may be less likely to have task-irrelevant or distracting thoughts relevant to concerns about how the hypnotist will perceive or judge them (e.g. I'll be seen as weak-willed if I respond) that can interfere with the free-flowing quality of hypnotic experience.

Lynn and his colleagues contend that individual differences play an important role in hypnotic suggestibility. The ability to relinquish perceived 'control' and participate fully in a co-operative relationship with the intent of experiencing hypnosis is undoubtedly important. When people believe they have not responded successfully to suggestions, or compare their responses to suggestions against a standard of performance, it may suppress their suggestibility (Lynn *et al.*, 2003). People also differ in their expectations about hypnosis and in their ability to detect, interpret and respond appropriately to subtle messages and cues inherent in verbal and nonverbal communications

and interpersonal behaviors across hypnotic and nonhypnotic situations. Moreover, although some individuals have little difficulty translating suggested images into sensations (e.g. feeling 'wet' while imagining oneself swimming), other individuals do not directly experience suggestion-related imaginings. Whereas subjects may differ in their attentional, fantasy and imaginative abilities, only a minimal degree of such abilities may be necessary for many individuals to adopt the definition of the situation called for by many suggestions (Lynn and Rhue, 1988).

Relative to other models reviewed so far, Lynn's places more emphasis on unconscious determinants of hypnotic responsiveness. Conscious awareness is not a necessary condition for the perception and semantic analysis of stimuli (see Hassin *et al.*, 2005). People usually respond without thinking about explanations for their behavior or assessing their cognitive processes (Langer, 1978). Indeed, a person lacks awareness of nearly all of his or her cognitive processes (e.g. turning ideas into specific words). Lynn *et al.* (1990b) have argued that features of the hypnotic context discourage awareness and analysis of the personal and situational factors that influence hypnotic responses. For example, typical hypnotic inductions are worded so as to direct attention inward, to reduce vigilance and to diminish the importance of action on the environment. According to this perspective, subjects' experience of an altered state can arise when the induction absorbs subjects' attention and focuses awareness on concrete images, sensations and behavior, thus diminishing abstract, logical and self-referential thought processes (Field, 1979). Moreover, inductions often contains words and phrases that are commonly associated with passive or receptive mental states (e.g. sleep, relaxation); the focus on sensations of relaxation and sleepiness discourages the subject from adopting an analytical attitude and searching for causes of behavior outside the framework of hypnosis. Even when inductions emphasize alertness, self-referential thinking and the sense of self-directed action is diminished because the direction for action is supplied by the hypnotist—the subject need not engage in making active choices or judgments, so long as the demands of the suggestion are clear and the

subject is willing and able to respond. The subject actively searches the environment for needed information about how to respond to facilitate the unfolding of the script without interruption (see Bargh, 1984).

Just as people often become observers of their own speaking (Lewicki, 1986), they become observers of their responses to hypnosis, and many individuals come to think of their responses to suggestions as involuntary or non-volitional. Nevertheless, Lynn and his colleagues (Lynn *et al.*, 1990b; Kirsch and Lynn, 1998), along with other social cognitive theorists (e.g. Sarbin and Coe, 1972, 1979; Barber *et al.*, 1974; Spanos *et al.*, 1977; Spanos, 1981, 1982, 1986; Coe, 1987), contend that it is incorrect to assume that the common experience of suggestion-related involuntariness reflects an actual loss of control over responding by the subject.

In fact, a 'central demand' of hypnosis is that subjects come to appraise their goal-directed responses to suggestions as involuntary 'happenings'. Sarbin and Coe (Sarbin and Coe, 1979; Sarbin, 1984) have observed that subjects' interpretations of their experiences reflect an implicit distinction between 'doings' (seeing themselves as agents of goal-directed, purposeful actions) and 'happenings' (viewing themselves as passive respondents). Spanos (Spanos, 1982; Spanos and Gorassini, 1984) noted that 'Interpreting behavior as an action involves attributing causality to the self (e.g. I did it), while interpreting it as a happening requires that causality be attributed to sources other than the self (e.g. It happened to me)'.

According to Lynn and his colleagues, subjects' interpretations or attributions of involuntariness are evoked by multiple factors including: (1) preconceptions and expectancies that hypnotic responses will be experienced as involuntary (e.g. Lynn *et al.*, 1984a; Spanos *et al.*, 1985, 1987); (2) the structure and wording of inductions and test suggestions that foster a passive response set (e.g. Spanos and Gorassini, 1984), and sometimes explicitly inform subjects that various effects are 'happening' to them (e.g. 'Your hand is rising by itself'; Spanos, 1982); (3) patterns of imaginative activity, including goal-directed fantasies, that accompany response to many test suggestions (e.g. Spanos and Barber, 1972); (4) attributions of response causality to

the hypnotist's ability and efforts, rather than to self-initiated actions (Lynn *et al.*, 1984*b*, 1987; and (5) self-observation of hypnotic responses, which, when subjected to introspection, have an involuntary quality just like many nonhypnotic actions (e.g. Wedemeyer and Coe, 1981; Kirsch and Lynn, 1998). It bears mention that social cognitive accounts do not necessarily give imaginings a causal role. However, imaginings legitimize and reinforce the interpretation that the actions occurred involuntarily.

Lynn *et al.* (1990*b*) have argued that the acid test of whether hypnotic behavior is involuntary is whether subjects are truly able to resist suggestions. Three studies suggest that expectancies are important determinants of subjects' feelings of suggestion-related involuntariness. In one study (Lynn *et al.*, 1984*a*), before hypnosis, an experimental assistant either informed subjects that good hypnotic responders could successfully resist suggestions and retain control over their movements, or that good responders fail to resist suggestions and experience a loss of voluntary control over their actions during hypnosis. After these instructions, subjects were told by the hypnotist that they should vividly imagine and experience motoric suggestions that were to follow but to resist engaging in movements. The information that subjects received about involuntariness had a strong effect on their ability to resist the hypnotist and tended to affect their reports of suggestion-related involuntariness in line with induced expectancies about appropriate responding.

Spanos *et al.* (1985) assigned highly suggestible subjects to four instructional conditions. Control subjects received no preparatory instructions. Subjects in the ability-to-resist condition were told that deeply hypnotized individuals were capable of becoming very involved in test suggestions and simultaneously resisting them. Subjects in the inability-to-resist condition were told that deeply hypnotized individuals were incapable of resisting suggestions. Finally, subjects in an ambivalent information condition were told that deeply hypnotized individuals' capacity to resist suggestions was unknown. All subjects were then hypnotized and administered four motoric suggestions. Subjects in the ability-to-resist condition successfully resisted 95 percent of the suggestions

and rated themselves as maintaining voluntary control over their behavior. Subjects in the remaining conditions passed (i.e. failed to resist) most suggestions, rated themselves as losing control of their behavior and reported an inability to resist the suggestions. Subjects in all four groups were generally equivalent in their ratings of imaginal involvement and degree of experiencing suggested effects. This study is particularly important because it indicated that subjects are able to resist nearly all of the suggestions when resistance is scripted by situational demands.

Spanos *et al.* (1984*b*) demonstrated that subjects could respond overtly opposite to suggestions while defining their responses as involuntary. The researchers informed subjects that deeply hypnotized individuals could imagine an arm movement in one direction while their unconscious caused their arms to move in the opposite direction. Even though subjects so informed moved their arms in the opposite direction, they imagined suggested effects and defined their counter-suggestion behavior as involuntary. Combined, these three studies highlight the important role of expectancies in shaping the way subjects construe their hypnotic experiences and demonstrate that the feeling of involuntariness is not a necessary accompaniment of successful response to hypnotic suggestions.

5.4. Hot issues, research and clinical applications

In this section, we present our response set theory, discuss the promise and perils of research on the neurophysiological substrates of hypnosis and introduce the reader to the clinical applications of the social cognitive perspective.

5.4.1. Response set theory

Our theory of response sets (Lynn, 1997; Kirsch and Lynn, 1997, 1998, 1999; Lynn and Hallquist, 2004) is a broad theory of human action with specific applicability to understanding the feeling of involuntariness that often accompanies suggestion-related responses. The theory represents an evolution of our individual thinking about hypnosis. More specifically, it extends Kirsch's theory in its emphasis on

expectancies and response sets, and it extends Lynn's integrative model in its emphasis on attributions and unconscious determinants of behaviors.

The reader will note that our theory represents a significant explanatory shift from earlier social cognitive theories that emphasize role-playing and strategic enactment of hypnotic suggestions to an emphasis on response sets before and during hypnosis, and automatic responses. Response set theory also departs from social cognitive theories which hold that people intentionally enact suggested responses, but misinterpret their behavior as nonvolitional. Finally, of all of the social cognitive models proposed to date, response set theory places the greatest importance on subjective experiences during hypnosis.

Response set theory centers on the observation that much of human activity seems to be unplanned and automatic. We do not consciously plan or think of our finger movements while typing; of the formation of letters while writing; of biting, chewing or using utensils while eating; of turning pages while reading; nor of the all the mindless, habitual, reactive responses we emit (i.e. scratching an itch, biting a nail, adjusting a tie, twiddling a thumb, doodling, etc.; Kirsch and Lynn, 1998). Once an intention to respond to a suggestion is formed, it no longer requires much conscious control. Instead, the response is triggered as an automatic or quasi-automatic operation that intervenes in initiating, correcting, interrupting, inserting, continuing and terminating action (Heckhausen and Beckmann, 1990).

Response set theory is grounded in an extensive literature on automatic and unconscious processes and implicit social cognition (Greenwald and Banaji, 1995), which has begun to identify the manner in which consciously unidentified or inaccurately identified traces of past experiences including attitudes, beliefs and stereotypes can influence perceptions, judgments and behaviors (see Hassin *et al.*, 2005). A cornerstone of our theory is the assumption that human experience is constructive. It is influenced by expectations about what should occur, as well as by what actually happens (Bruner, 1957, 1986; Kirsch, 1985, 1990).

However, our theory (Kirsch and Lynn, 1997, 1998) makes a far more radical proposal—

that all actions, mundane or novel, planned or unplanned, hypnotic or otherwise, are at the moment of activation initiated automatically, rather than by a conscious intention. Evidence for the automatic activation of voluntary behavior comes from studies of the relationship between intentional movements and cortical function, which suggest that cerebral initiation of supposedly spontaneous, voluntary acts begins prior to the awareness of a triggering stimulus (Libet, 1985; Walter, as cited in Dennett, 1991).

Actions are prepared for automatic activation by response sets. Response sets are comprised of coherent mental associations or representations, and refer to expectancies and intentions that prepare cognitive and behavioral schemas (i.e. knowledge structures), roles or scripts for efficient and seemingly automatic activation. Expectancies and intentions are temporary states of readiness to respond in particular ways to particular stimuli (e.g. hypnotic suggestions), under particular conditions (Gollwitzer, 1993). They differ only in the attribution the participant makes about the volitional character of the anticipated act (Kirsch, 1985, 1990). That is, we intend to perform voluntary behaviors (e.g. stopping at a stop sign); we expect to emit automatic behaviors such as crying at a wedding or, more relevant to our present discussion, responding to a hypnotic suggestion.

Because intended as well as unintended behaviors are initiated automatically (Bargh and Gollwitzer, 1994), it is not the experienced automaticity of ideomotor responses that is an illusion, but rather the experience of volition that is claimed to characterize everyday behavior (Kirsch and Lynn, 1999). We (Kirsch and Lynn, 1997) have proposed that the feeling of will is actually a judgment involving the attribution of a behavior to one's own agency, a conclusion that has since been adopted by others (Wegner, 2002). What is volitional and what is not is often ambiguous subjectively (Norman and Shallice, 1986). The interpretation that an act is voluntary is made on the basis of such factors as culturally transmitted beliefs about the situation in which the behavior is occurring and the consistency of the behavior with one's goals, motives and intentions (Lynn *et al.*, 1990b). The widespread belief that hypnosis brings about

suggested responses on an involuntary basis facilitates the interpretation of hypnotic responses as involuntary ‘happenings’ rather than goal-directed actions.

According to response set theory, situations (e.g. hypnotic communications) can trigger response sets that influence thoughts, feelings and actions. Suggestions that call to mind specific situations or feelings associated with events and actions can trigger response sets that unfold in a seamless, mindless, automatic manner (Lynn and Hallquist, 2004). We contend that although hypnotic responses may be triggered automatically, suggestion alone is not sufficient to trigger them. Instead, suggested physical movements are preceded by altered subjective experiences (Silva and Kirsch, 1992; Lynn, 1997). The response expectancy for arm levitation, for example, is that the arm will rise by itself. Yet a sufficiently convincing experience of lightness must be perceived for upward movements to be triggered (Lynn, 1997; Kirsch and Lynn, 1998). Or a vivid (suggested) perceptual, multisensory experience of a mosquito buzzing close to one’s face may trigger a seemingly automatic response to ‘shoo it away’. In support of the hypothesized link between subjective experiences and overt responses, subjective response expectancies predict hypnotic behavior and experience significantly, even with behavioral expectancies controlled (Gearan *et al.*, 1995).

We (Kirsch and Lynn, 1997) have posited that responding to suggestions requires attentional resources, although how much attention is required for different types of suggestions has not, as yet, been ascertained. Motor movements may require little or no attention. In fact, expectation and imagination can produce suggestion-related movements, even when subjects intentionally generate oppositional thoughts and images (Easton and Shor, 1976; Zamansky, 1977; Ansfield and Wegner, 1996). Nevertheless, a modicum of attention may be involved in generating and monitoring subjective experiences associated with triggering the suggested response. People may vary in the degree of sensations (e.g. lightness in response to a hand levitation suggestion) they experience for an efficient response to be triggered, as shown by research on the effects of performance standards on hypnotic responding (Lynn *et al.*, 2003).

Moreover, some suggestions such as creating a negative hallucination (e.g. not seeing an object in one’s path), or challenge suggestions (e.g. ‘Try to bend your arm’ after a suggestion for arm immobilization) may require considerable intentionality and attentional resources to produce and maintain the suggested response (Sheehan and McConkey, 1982).

The question of how much attention is required to respond to hypnotic suggestions in general, much less in response to different types of suggestions (e.g. motor, challenge, cognitive-perceptual), is open. Data pertaining to this question are mixed (see Kirsch and Lynn, 1996, 1998) and have been largely confined to more complex responses, often ones that do not require an involuntary movement. However, research suggests that competing tasks or cognitive load interferes with responses to ideomotor and cognitive suggestions but not with responses to challenge suggestions (Kirsch *et al.*, 1999). These findings suggest that different attentional resources are required to respond to production versus inhibition suggestions. Accordingly, the question ‘Do hypnotic responses require attentional resources?’, should be refined to ‘What attentional resources are required to respond to what suggestions, under what circumstances?’

Response set theory develops predictions related to what might account for individual differences in suggestibility (Kirsch and Lynn, 1998). First, since hypnotic behavior is intended, responses to suggestion should be correlated with attitudes toward hypnosis. Second, since behavioral response expectancies are preparatory sets that can prepare responses for automatic activation, they should be correlated with suggestibility. Third, because altered subjective experience is proposed as a triggering condition for behavioral responding to suggestion, subjective response expectancies should also be correlated with suggestion. Data strongly support these hypotheses (e.g. Gearan *et al.*, 1995; Kirsch *et al.*, 1995b).

5.4.2. The physiological substrates of hypnosis and imaginative suggestions

In another work (Lynn *et al.*, 2007), we provided a critical analysis, from a social cognitive

perspective, of the burgeoning literature on the physiological substrates of hypnosis and imaginative suggestions. As the reader might suspect, we took exception to the opinion that the extant data suggest that the altered state issue is resolved in favor of state theories (e.g. Gruzelier, 1996; for further discussion, see Spiegel, Chapter 7; Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume). Nevertheless, we did state that ‘... the search for a discrete state of hypnosis is arguably one of the most fascinating and important endeavors in the field of hypnosis’ (p. 146). We identified three ways in which scientists could usefully approach the question of identifying the physiological substrates of hypnosis (see also Kirsch and Lynn, 1995): (1) determine the physiological substrates of responses to suggestions; (2) identify the physiological correlates of differences in hypnotic suggestibility; and (3) identify the physiological substrate of the hypothesized hypnotic state. We will consider each of these approaches in turn.

5.4.2.1. The physiological substrates of suggestions

Contrary to statements expressed by a number of proponents of state theories of hypnosis (e.g. Spiegel, 1998; for further discussion, see Spiegel, Chapter 7; Barabasz and Barabasz, Chapter 13, this volume), social cognitive theorists do not deny that hypnosis reflects genuine alterations in consciousness. On the contrary, discovering physiological concomitants of a hypnotic induction and suggestions would be consistent with all theories, including social cognitive theories. All subjective experiences are assumed to have physiological substrates or correlates with potentially identifiable brain activity (Hyland, 1985; Wagstaff, 2000; Willingham and Dunn, 2003). According to Wagstaff (2000), a prominent social cognitive theorist, psychophysiological correlates of hypnosis are inevitable by-products of ‘the various activities engaged in by the subject as he or she responds to the demands of hypnotic suggestions by variously relaxing, shifting attention, concentrating, “drifting”, imagining, “letting go”, thinking, complying and so on, depending on the suggestion’ (p. 156). Thus, there is no need to invoke an altered state explanation for the many

possible shifts in consciousness that can occur during hypnosis.

If hypnosis produces an altered state that yields a consistent biological marker of trance, then this marker should be apparent regardless of how suggestions are worded or what strategies subjects use to facilitate responding (but see Spiegel, Chapter 7, this volume). However, researchers identified with both a social cognitive and weak interpretation of the altered state position concur that hypnosis is not a uniform state, but rather reflects what participants ‘do’ during hypnosis (see Kihlstrom, 2003), which varies as a function of the suggestions they receive. Woody and McConkey (2003) suggested that different abilities, presumably related to different cortical activation patterns, may be required to respond to different suggestions (e.g. hand levitation versus hypnotic analgesia). Woody and McConkey (2003) also proposed that people with different abilities may produce the same response in different ways, also presumably via different cortical structures or mechanisms. To make matters even more complicated, Woody *et al.* (2005) suggested that the context in which a particular suggestion is embedded (vis-à-vis its placement in relation to other suggestions) can influence demand characteristics and the strategies subjects use and, by implication, psychophysiological activity.

Accordingly, it is not surprising that different suggestions are accompanied by disparate patterns of brain activation (Lynn *et al.*, 2007). Cortical activation depends largely on the task and the specific suggestions presented (e.g. Rainville *et al.*, 1997, 1999a,b, 2000; Gruzelier, 1998; Barabasz *et al.*, 1999; De Pascalis *et al.*, 1999; Crawford, 2001; Hofbauer *et al.*, 2001; Kihlstrom, 2003; Horton and Crawford, 2004), as well as the subjects’ cognitive abilities (Wagstaff, 1998; Ray and De Pascalis, 2003).

That said, hypnotic suggestions can produce impressive changes in brain activation that correspond, more or less, to those produced by actual perceptual experiences (Szechtman *et al.*, 1998; Kosslyn *et al.*, 2000; Woody and Szechtman, 2000, 2003; Spiegel, 2003). This body of evidence provides strong support for the proposition that hypnotized subjects are not merely faking or playing a role with no concomitant subjective experience (see Oakley, Chapter 14, this volume). However, research also reveals that hypnosis is

not necessary for suggestions to modulate a variety of hypnotic responses and physiological reactions (Raz *et al.*, 2006). So whereas hypnotic suggestion can produce profound alterations in consciousness, it does not reveal the presence of a profoundly altered state because the same patterns of responding can be achieved with suggestions administered in a situation in which hypnosis is not induced.

One way of negating this conclusion is to suggest that nonhypnotized subjects somehow become 'entranced' or slip into 'spontaneous hypnosis' (see Barabasz, 2005/2006). However, there are serious problems with this interpretation. If researchers fail to operationally define the 'state' of hypnosis, and then argue that people are in a trance or altered state (even with no prior induction), their claim cannot be falsified, and is thus not amenable to scientific scrutiny. Moreover, a moment's reflection suggests that it is just as logical, and perhaps more parsimonious, to say that people who receive a hypnotic induction fall into a state of 'relaxation' or 'imagination' to account for the failure to find differences among subjects who receive hypnosis, relaxation or imagination instructions, for example (Lynn, 2007).

According to the social cognitive perspective, the finding of equivalence among the latter conditions should be the norm, rather than the exception. This is so because, as we stated earlier, beyond increasing expectancy and motivation, hypnosis generally does not produce impressive gains in responding to imaginative suggestions. When motivation and expectancy are controlled adequately, differences across hypnotic and non-hypnotic conditions are generally negligible (Barber, 1969; Spanos, 1986; Braffman and Kirsch, 1999). Moreover, before the rise of neuropsychology, the basis for the trance hypothesis was subjects' self-reports that they are in an altered state. Hilgard and Tart (1966) assessed those reports by people who were not hypnotized. Their results indicated that very few people reported slipping into a trance.

5.4.2.2. The physiological correlates of differences in suggestibility

If subjects who differ in hypnotic suggestibility differ in terms of their baseline functioning, as indexed by physiological markers, it would

have the potential to illuminate the trait-like character of hypnotic responsiveness (Lynn *et al.*, 2007). However, the finding of such baseline differences (Sabourin *et al.*, 1990; Graffin *et al.*, 1995) is not inconsistent with social cognitive theories of hypnosis. That is, when baseline differences surface, they may arise as a function of the fact that low suggestible subjects are more resistant to experience hypnosis, or more anxiously focused on the task than highly suggestible subjects. Future studies could profitably evaluate this possibility.

When we examine differences in suggestibility during hypnosis, the picture is just as murky. As Lynn *et al.* (2007) point out, although the finding that highly suggestible subjects display greater EEG hemispheric asymmetry and hemispheric specificity for tasks relative to lows could be interpreted as an indication of cognitive flexibility among highly suggestible individuals (De Pascalis and Palumbo, 1986; Horton and Crawford, 2004), many other explanations are possible. For example, frontal asymmetries are associated with a potpourri of variables including socio-economic status, basal cortisol levels, immune function, self-report measures of affect and personality, shyness and social anxiety, and memory for sad narratives (see Cacioppo, 2004). At least some of these variables may covary with suggestibility, as may other variables which may be responsible for the differences in asymmetries observed, including expectancies, motivation and fantasy proneness (Braffman and Kirsch, 1999). As Hasewgawa and Jamieson (2002) pointed out: (1) the functional significance of differences in neurophysiology is not clearly established; (2) measurements only provide a limited picture of the brain's functional organization; and (3) the extent to which local markers contribute to hypnotic experience is uncertain (p. 113).

Yet another problem that clouds interpretation of physiological differences related to suggestibility is that virtually all studies to date have neglected to include a group of medium suggestible subjects. Given that only low and highly suggestible subjects are compared, it is impossible to ascertain whether any differences on physiological measures are due to the high group being distinctly different from normative (medium) scoring subjects, the low group being

especially nonsuggestible, or a combination of both possibilities (Kirsch and Lynn, 1995; Lynn *et al.*, 2007). If medium suggestible subjects are not included in the experimental design, differences between high and low suggestible subjects may be wrongly attributed to the presence of an altered state in the responsive subjects, rather than to the anxiety and frustration that low suggestible subjects not uncommonly report in unsuccessfully responding to suggestions (see Lynn and Rhue, 1991). A final problem is the lack of consistency in findings related to individual differences in suggestibility (Sarbin and Salgle, 1979; Perlini and Spanos, 1991; Crawford and Gruzelier, 1992; Ray, 1997; Gruzelier, 1998; De Pascalis, 1999; Rainville *et al.*, 1999a; Williams and Gruzelier, 2001). The reasons for the inconsistencies across studies are not clear, and sustained research will be needed to uncover them.

5.4.2.3. The physiological substrate of the hypnotic state

Some of the same issues crop up when we consider studies that claim to demonstrate that hypnosis has unique physiological concomitants. One such claim is that the 'hypnotic state' is related to the activation of the anterior cingulate cortex (ACC; Maquet *et al.*, 1999; see also Crawford *et al.*, 1993; Kropotow *et al.*, 1997; Rainville *et al.*, 1997, 1999a; Szechtman *et al.*, 1998). However, as Hasegawa and Jamieson (2000) observed, the findings regarding the ACC 'do not indicate a discrete state of hypnosis' (p. 113). In fact, as Lynn *et al.* (2007) noted, the ACC is associated with a host of tasks and processes, ranging from: (1) reappraising the relationship between internal states and events; (2) monitoring the degree of response conflict; (3) over-riding prepotent response tendencies; (4) lactate-induced panic; to (5) viewing a loved partner relative to friends (see Oschner and Gross, 2004). Moreover, the pattern of results differs greatly across studies, with very diverse brain structures activated in conjunction with the ACC, most probably in response to different suggestions and task demands (Lynn *et al.*, 2007).

Beyond this sampling of issues and difficulties are methodological limitations of note. In only rare instances do researchers provide subjects in nonhypnotic control conditions with the same suggestions as subjects who receive hypnosis.

This confounds the induction of a hypothesized altered state with particular suggestions for changes in experience (Lynn *et al.*, 2007). Moreover, even when similar suggestions have been used, it is not clear that the suggestions were experienced to a comparable degree in the hypnosis and nonhypnosis groups. A related problem is that virtually none of the studies to date have parsed the effects of relaxation from hypnosis (for an overview of design issues in neuroimaging research, see Oakley, Chapter 14, this volume).

Barabasz (2000) used a group of low suggestible simulators who role-played hypnosis as a control group for demand characteristics (see also Gruzelier *et al.*, 1988). However, it is questionable whether this type of control group is of much value in psychophysiological studies. That is, there is no way that simulators can role-play a physiological response without attempting to experience the suggestion. The fact that simulators are told to 'not go into hypnosis' virtually guarantees that they will not be able to experience what is suggested, and that their physiological profile will differ from highly suggestible, non role-playing subjects. The very act of pretending or role-playing may have psychophysiological sequelae, which may exaggerate differences across simulators and non role-players.

Many of the studies of the neurophysiological basis of hypnosis test subjects sequentially in waking and hypnotic conditions. The problem is that when subjects are not initially hypnotized, but know they will be hypnotized in the next trial, they may deliberately 'hold back' from responding or getting engaged in the procedure in order to demonstrate role-appropriate gains during hypnosis (see Zamansky *et al.*, 1964). Between-group designs, in which subjects are not tested on a sequential basis, circumvent this problem. In conclusion, the available evidence provides no justification for the claim that psychophysiological studies can resolve the question of whether hypnosis produces a distinct and unique altered state of consciousness.

5.4.3. Clinical applications

Social cognitive theorists have championed the clinical application of hypnosis for a variety of

disorders, and conducted research that has direct implications for the practice of clinical hypnosis (see Lynn and Kirsch, 2006). More than 20 years ago, Barber (1985) maintained that administering suggestions in the context of hypnosis can improve therapeutic outcomes by: (1) generating positive treatment motivation and expectancies that serve as self-fulfilling prophesies; (2) capitalizing on patients' beliefs that therapists who use hypnosis are more highly trained, skilled and knowledgeable; and (3) permitting the therapist to talk to the patient in a very personal and meaningful way that is ordinarily not possible in a two-way conversation.

Barber's general assessment was supported by a meta-analysis conducted by Kirsch *et al.* (1995a), which indicated that using hypnosis as an adjunctive procedure enhances the effectiveness of cognitive-behavioral treatments. More recently, the meta-analytic study of Montgomery *et al.* (2000) revealed that hypnosis provides substantial pain relief for 75 percent of the population, and that hypnosis is at least as effective as an analgesic as nonhypnotic interventions, including cognitive-behavioral treatments. Chaves (1993), a noted social cognitive theorist, has discussed how an array of cognitive strategies can be used to ameliorate and change the interpretation of the experience of pain, and treat diverse medical and dental conditions with hypnosis. Reviews by social cognitive theorists and their colleagues (Chaves, 2000; Lynn *et al.*, 2000; Lynn and Kirsch, 2006) have concluded that hypnosis is a promising adjunct to the treatment of obesity, smoking cessation, pain, medical conditions, anxiety and post-traumatic conditions.

We (Kirsch, 1994; Lynn and Kirsch, 2006) have contended that hypnosis can be used to fortify treatment expectancies and enhance treatment effects. We have argued that expectancies can be used to maximize treatment gains by doing the following: (1) conducting a careful analysis of patient's attitudes, beliefs and expectancies about hypnosis; (2) monitoring therapeutic expectancies over the course of treatment; (3) debunking therapy-interfering myths about hypnosis (e.g. people lose control, reveal secrets); (4) presenting a convincing rationale for therapy and labeling the procedures as relaxation, or imagination if the patient rejects hypnosis; (5) assessing for

the presence of minimal suggestibility by administering easy to pass suggestions at the outset of treatment with hypnosis; (6) selecting tasks that are graduated and will ensure success; (7) adopting a permissive therapeutic stance; (8) structuring expectations so that even small improvements are seen as steps toward achieving desired goals; and (9) reinterpreting failures to respond to hypnotic suggestions as successes.

For most therapeutic tasks involving hypnosis, high suggestibility is not a prerequisite. However, the research on suggestibility modification implies that therapists can enhance suggestibility by encouraging the use of imagination; facilitating rapport with the patient; encouraging patients to adopt lenient personal standards for experiencing suggested effects (e.g. informing patients that they need not have a completely realistic image of suggested events), as well as an active rather than a passive response set; and suggesting cognitive strategies to help patients experience suggested events (see Gfeller, 1993).

5.5. Future directions and challenges for the field

We believe that the social and contextual aspects of the hypnotic interaction are relatively well understood. Scientists of all stripes recognize the importance of expectations, demand characteristics, motivation to respond, and rapport with the hypnotist, even if these elements of the hypnotic proceedings are not construed as core features of hypnosis. What is more challenging to the field is to understand the cognitive determinants of responsiveness to imaginative suggestions, regardless of whether they are embedded in a hypnotic or nonhypnotic context. We know relatively little about the operation of automatic and attentional processes, and how subjects can use effective cognitive strategies, with little or no awareness they are using them, to respond efficiently to suggestions. What initiates and terminates response sets? What facilitates the development of positive response sets in relation to hypnosis and other social situations? What happens when opposing response sets collide? How is conflict in hypnosis resolved (see McConkey, 1991)? At what

point do even highly suggestible people become more conscious and deliberate in their responses? We believe that Woody's dissociation theory, well represented in this volume (see Woody and Sadler, Chapter 4, this volume), as well as response set theory, can point to fruitful directions for researchers to pursue in addressing these questions. And of course, here too, neurophysiological innovations promise to expand our knowledge base.

Although we do not hold much stock in continuing to search for additional 'markers of hypnosis', or in determining differences between simulating and non role-playing subjects, further investigation of the ability to modify suggestibility seems warranted. It is important to learn in what ways subjects who undergo suggestibility modification training are alike and different from natural highly suggestible subjects who do not undergo the training (McConkey and Barnier, 2004). Do 'natural' and 'created' 'highs' process information pertinent to suggestions in divergent ways prior to training, but comparably after training? Do different parts of their brains 'light up' as they respond to suggestions and brain activation is measured? These are some of the questions we are interested in pursuing. It also would be worthwhile to determine whether modifying suggestibility can augment the effectiveness of psychotherapy and assist patients in relieving pain and coping with surgical procedures.

Researchers have developed a variety of well standardized individual and group hypnotic suggestibility scales. However, precious few studies have examined the assumption that the scales are equivalent in terms of participants' subjective experiences, including the experience of involuntariness. Preliminary data collected in our (Lynn and Hallquist) laboratory indicate that this is not the case, and that individuals selected for participation in hypnosis studies may differ as a function of the screening scales they received. Relatedly, it will be important to determine whether high scores on different suggestibility scales require different responses and interpretational sets and abilities.

Sophisticated brain imaging tools, in the hands of equally sophisticated researchers, promise to provide new insights into how we respond to imaginative suggestions at the level

of our basic physiology (Oakley, Chapter 14, this volume). Given that proponents of the gamut of theories of hypnosis are interested in the physiological correlates of hypnotic suggestions and phenomena, the door is open to fertile collaborations. Lynn *et al.* (2005) contended that researchers who embrace state and nonstate positions could profitably engage in dialog regarding the pros and cons of scientific methodologies (e.g. control groups, selection of subjects, fMRI research) and the nature and outcome of research that would constitute more or less definitive evidence for competing viewpoints. One can only hope that loyalty to a particular theoretical perspective will not preclude such a dialog.

Considerable variance in hypnotic suggestibility, beyond motivation and expectation, remains unexplained, and measures of absorption, fantasy proneness and dissociation add relatively little to the prediction of response to suggestion (Kirsch *et al.*, 1995*a,b*). Nevertheless, different abilities and cognitive skills, which have not as yet been identified, may facilitate responding to different types of suggestions (see Wagstaff, 1991; Laurence *et al.*, Chapter 9, McConkey, Chapter 2 this volume). Thus, uncovering additional correlates of suggestibility remains an important empirical task (see Benham *et al.*, 2006).

5.6. Conclusions

The defining feature of the social cognitive view of hypnosis is a rejection of the traditional view that hypnotic experiences require the presence of an altered state of consciousness. A review of the evidence provides strong support for this rejection. Two aspects of the data we reviewed are particularly critical. First, the hypnotic induction, which is a suggestion to enter a hypnotic state, adds little to responsiveness to suggestion; given the same suggestions, people are almost as responsive without it. Second, various motivational and expectancy-enhancing instructions can accomplish the same rather small increase in response. Nevertheless, most members of the hypnosis community continue to endorse the altered state hypothesis (Christensen, 2005). What can be made of this state of affairs?

There is a clear parallel between the current situation and one that occurred in the field

more than two centuries ago. At that time, what we now call hypnosis (then called mesmerism) was held to be due to the movement of a subtle magnetic force that permeated the universe. Experiments designed and conducted by some of the leading figures of that time showed rather conclusively that magnetism was not necessary for these phenomena to occur (Franklin *et al.*, 1785/1970). Nevertheless, most of the mesmerists continued to believe in animal magnetism, and mesmerism went into a decline, from which it is yet to fully recover.

Today we run the same risk. Hypnosis, defined as a situation in which people respond to imaginative suggestions, is real. Its effects are sometimes profound (e.g. Raz *et al.*, 2002), and it is a clinically useful tool that can enhance the effects of psychotherapy and ameliorate pain and physical symptoms. But it does not require the induction of a trance state (e.g. Raz *et al.*, 2006). We are gratified that many of the authors whose work is represented in this volume appreciate the important role of social and cognitive variables. Nevertheless, we fear that if the broader hypnosis community continues to propound an outmoded version of the altered state hypothesis (or worse yet, conclude that it has been confirmed), it will suffer the same fate as mesmerists. The baby will be thrown out with the bathwater.

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CHAPTER 6

How hypnosis happens: new cognitive theories of hypnotic responding

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6.1. Introduction

In hypnosis, mere words have a dramatic impact (White, 1941; see also McConkey, Chapter 3, this volume). Hypnotizable individuals seem compelled to perform the hypnotist's suggestions and are convinced that their hypnotic experiences are real. Although 60 years of experimental research has clarified much of the nature of hypnosis and the limits of its effects, its mechanism remains controversial. Some theorists argue that hypnotic responses reflect relatively mundane psychological processes—such as expectancy—and thus require no special or additional explanation (Wagstaff, 1981, 1998; Spanos, 1986; Sarbin, 1992, 1993; Braffman and Kirsch, 2001; see also Lynn *et al.*, Chapter 5, this volume). Other theorists argue that hypnotic responses reflect a fundamental transformation in cognitive processing (Hilgard, 1974, 1992; Kihlstrom, 1997, 1998, 2003; Woody and Bowers, 1994; see also Kihlstrom, Chapter 2; Woody and Sadler, Chapter 4, this volume). They point especially to the exaggerated phenomenology that is the hallmark of hypnosis.

What do we mean by exaggerated phenomenology? In response to relatively straightforward verbal communications from the hypnotist (but see McConkey, 1990; Barnier and McConkey, 1999*a*), hypnotized individuals typically show disruptions of personal agency

and become transiently deluded about the source and reality of their experiences (Sutcliffe, 1961; Weitzenhoffer, 1974; Lynn *et al.*, 1990; McConkey, 1990; Woody and McConkey, 2003). These two qualities, which Kihlstrom (Chapter 2, this volume) calls 'experienced involuntariness bordering on compulsion' and 'conviction bordering on delusion' (p. 21), have remained central to definitions of the domain of hypnosis. But it is not just that hypnotic responses happen easily or seem real. Subjectively, they feel *surprisingly* easy and *surprisingly* real. In other words, hypnotic responses, even to quite simple suggestions, often feel to the hypnotized individual and appear to an observer to be both unexpectedly and unusually compelling.

To illustrate the quality of compelling subjective involuntariness, consider the phenomenon of post-hypnotic suggestion, which involves suggesting to a hypnotized subject that after hypnosis they will respond in a particular way when they receive a specific cue—such as reaching down and scratching their left ankle when they hear a tapping sound, as in the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor and Orne, 1962). Across nine studies, Barnier and McConkey (1995, 1996, 1998*a,b,c*, 1999*a,b*, 2001) explored the parameters of post-hypnotic responding inside and outside the laboratory (for reviews, see Barnier, 1999; Barnier and McConkey, 2003; McConkey,

Chapter 3, this volume). Highly hypnotizable subjects responded successfully to a variety of suggestions—to rub their earlobe, to put their hands behind their head, to cough out loud, to say ‘Psych 1’, to imagine a heavy weight in their hand and to feel their hand moving down, or to mail postcards every day—and, for those who responded, they often described their behavior as feeling outside of their own control. For instance, in work by Barnier and McConkey (1996), one female participant received a post-hypnotic suggestion to rub her right earlobe when the experimenter said ‘Well, what did you think of that?’ As soon as the cue was given, her hand moved towards her ear and as her hand and arm moved (or more precisely, as she moved her hand and arm) she watched them move with a look of surprise and puzzlement on her face. At that moment, she experienced her (post)hypnotic response as surprisingly and overwhelmingly involuntary.

To illustrate the quality of compelling subjective reality, consider the phenomenon of hypnotic delusions, which involves suggesting to a hypnotized subject that during hypnosis they will experience themselves in a different way or as a different person. For instance, in a classic study, Sutcliffe (1961; see also Noble and McConkey, 1995; Burn *et al.*, 2001) gave a suggestion for sex change and instructed male subjects to become female and female subjects to become male (see also McConkey, Chapter 3, this volume). In more recent work, Cox (2007; see also Cox and Bryant, Chapter 12, this volume) gave suggestions for identity change and suggested that subjects become a different identity—real or nonexistent, known or unknown, similar or dissimilar, such as a real or nonexistent same-sex sibling or friend. In both sex change and identity change work, very highly hypnotizable subjects responded successfully: they changed their names, described themselves in different ways, recalled memories consistent with their new identity and, most importantly, remained convinced that their delusional experiences were real in the face of strong challenges. For instance, in one study by Noble and McConkey (1995), a male subject received a suggestion to become a female. He changed his name to a female name, described his appearance as female and, when asked to open his eyes

to look at an image of himself on a video monitor, he said ‘That’s not me, I don’t look like that’. At that moment, he experienced his hypnotic response as surprisingly, overwhelmingly and, in his words, ‘disgustingly’ real.

At various points in the history of hypnosis research, much has been made of the role of expectations in hypnosis; that hypnotic experiences, even those as complex as post-hypnotic suggestion and hypnotic delusions, may be almost entirely the product of expectancies (e.g. Barber and Calverley, 1963, 1964*a,b*; Barber, 1969; for modern analyses, see Braffman and Kirsch, 2001; Kirsch, 2001). For instance, Kirsch (1991) argued that expectancy may be the sole proximal determinant of hypnotizability and that the residual variance is a result of measurement error (see also Lynn *et al.*, Chapter 5, this volume). However, Benham *et al.*’s (2006) recent analysis of expectancy judgments (collected repeatedly throughout the administration of a standardized, individually administered hypnotizability scale) and ability factors as simultaneous predictors of hypnotic performance (measured in terms of both response to individual items and an overall score) failed to support Kirsch’s view. Benham *et al.* (2006) reported that ‘although expectancies had a significant effect on hypnotic responsiveness, there was an abundance of variance in hypnotic performance unexplained by the direct or indirect influence of expectation and compatible with the presence of an underlying cognitive ability’ (p. 342).

Although these findings confirm that mere expectations about hypnotic responding cannot be its sole cause (see also Woody and Sadler, Chapter 4; Laurence *et al.*, Chapter 9; Tasso and Perez, Chapter 11, this volume), expectations remain a contentious aspect of hypnosis in need of further analysis. Appropriately then, both of the theoretical accounts that we present in this chapter reconsider the role of expectations in hypnosis. And we argue, at least for one of our accounts, that hypnotic responses *feel* like they do, not because they meet expectations, but because they violate them—or to use Sarbin’s (2002) language, because they are *counter-expectational*.

In this chapter, we aim to explain the primary phenomenology of hypnosis with two new accounts of how hypnosis happens. First, we

discuss in more detail the phenomena to be explained and the questions we address. Then, we briefly and selectively review previous generations of cognitive theories that have influenced and informed our answers to these questions. Next we introduce our new accounts: Dienes and Perner's (2007) cold control theory of hypnosis and Barnier and Mitchell's (2005) discrepancy-attribution theory of hypnotic illusions. We present these accounts together because they share a number of features, especially their roots in contemporary cognitive psychology. For each account, we make a core conceptual distinction, summarize its background and describe its extension to hypnosis. We review the data supporting each account and highlight the questions and issues for future research. Next, we consider how these accounts can (or cannot) be integrated with each other and with competing theories. Finally, we draw out the implications of these accounts for intrinsic, instrumental and applied hypnosis, and we comment on future directions for the field of hypnosis.

6.2. Core phenomena and questions to address

6.2.1. The experience of hypnosis

A theory of hypnosis must account for the behaviors and experiences of hypnosis. We have already pointed to the quality of hypnotic responding as one core feature that needs explanation. As noted by generations of hypnosis researchers, 'subjective experience lies at the heart of hypnosis' (Kihlstrom, Chapter 2, this volume; see also White, 1941; Hammer, 1961; Sutcliffe, 1961; McConkey, Chapter 3, this volume). However, most theorists and researchers have focused their attention on the experience of involuntariness. This characteristic feature of hypnotic responding is reflected in Bowers's (1981) distinction between *doings* and *happenings*, where doings appear to be voluntary acts and happenings appear to be outside the individual's control. Weitzenhoffer (1974) called this quality of hypnosis the *classic suggestion effect*, 'the transformation of the essential, manifest ideational content of a communication' into behavior that is experienced as involuntary (p. 259; see also Woody and McConkey, 2003;

Kihlstrom, Chapter 2, this volume). According to Kihlstrom (Chapter 2, this volume), Weitzenhoffer believed that only involuntary responses to suggestion are truly hypnotic.

But the experience of hypnosis is by no means uniform either across people or within the same person. When a subject responds to a post-hypnotic suggestion, as illustrated in the case of the young woman rubbing her earlobe, the experience is predominantly characterized by subjective *involuntariness*; she felt as if her hand moved to scratch her ear all by itself. In contrast, when a subject responds to a delusion suggestion, as illustrated in the case of the young man becoming the opposite sex, the experience is predominantly characterized by subjective *reality*; he felt as if he was a girl. This distinction—between involuntariness and reality—is an important one, because although involuntariness has more typically been the focus of theorizing and research, not all hypnotic suggestions lead to this or only to this experience (see also McConkey, Chapter 3, this volume).

Woody *et al.* (2005; see also Woody and Barnier, Chapter 10, this volume) laid out a 2×2 matrix for hypnotic items, which crosses motor versus cognitive-perceptual items with direct versus challenge items. Motor items involve motor actions, such as your arm moving upwards following a hand levitation suggestion. Cognitive-perceptual items involve (positive or negative) distortions in perception, memory, emotion and thought, such as seeing a cat following a visual hallucination suggestion, or not being able to remember the events of hypnosis following a post-hypnotic amnesia suggestion. Direct suggestions tell you exactly what your response should be, such as 'your arm will get heavy and fall down' during a hand lowering suggestion. Challenge suggestions establish a suggested state of affairs ('you can't smell anything') and then challenge you to test this reality ('take a good sniff from this bottle'), such as during an anosmia suggestion.

Arguably, direct motor items, such as hand lowering, are characterized predominantly by involuntariness, and direct cognitive-perceptual items, such as taste hallucination, are characterized predominantly by reality. Challenge items, both motor, such as finger lock, and cognitive-perceptual, such as post-hypnotic amnesia, are

characterized by both involuntariness and reality in some combination. We'll return to this point when we describe the discrepancy-attribution theory of hypnotic illusions (Barnier and Mitchell, 2005), because this relationship between suggestion and the resulting quality of hypnotic experience has not generally been addressed (for more on testing the reality of suggestions, see McConkey, Chapter 3, this volume).

6.2.2. The domain of hypnosis

What other phenomena need to be explained in a useful theory of hypnosis? In this chapter, we conceptualize the domain of hypnosis and the domain of necessary explanation at three levels. Before laying these out, we should acknowledge the work of others in defining this domain (e.g. Hilgard, 1965, 1973, 1975; Kihlstrom, 1985; Killeen and Nash, 2003), and note that, as in other areas of psychology such as personality, intelligence and development (and indeed of science more generally; Wilson, 1998), theorizing in hypnosis has shifted from grand, general theories to more circumscribed theories of specific phenomena (and perhaps is trending back to general theories again). In general, we can distinguish theories of 'hypnosis' from theories of 'specific hypnotic phenomena' (see Sheehan and Perry, 1976; Lynn and Rhue, 1991; Killeen and Nash, 2003).

6.2.2.1. Level 1: classic hypnotic items

Hypnosis first can be described as a set of classic hypnotic phenomena or *items*. For instance, Hilgard (1973; see also Hilgard, 1965, 1975) defined the domain of hypnosis by identifying 'the common topics that we study when we engage in hypnotic research' (p. 972). Echoing early researchers in the field (e.g. Hull, 1933) and hypnotizability measures he and others developed at that time, Hilgard considered the following to be typical or specific hypnotic phenomena: (1) ideomotor action and catalepsy; (2) hallucinations (both positive and negative, including analgesia and perceptual distortions); (3) age regression and dreams; (4) amnesia and hypermnesia; and (5) post-hypnotic suggestion. A decade later, Kihlstrom (1985) focused on analgesia, amnesia and hypermnesia, age regression,

perceptual effects (including hallucinations), trance logic and the hidden observer, and Spanos (1986) illustrated his account with just analgesia, amnesia and trance logic.

Recent accounts have also tended to focus their explanations on particular phenomena. Woody and Bowers (1994; see also Woody and Sadler, Chapter 4, this volume) tested their account with analgesia and amnesia, and differentiated it from explanations of motor behaviors (particularly direct motor action, known as ideomotor suggestions). Kirsch and Lynn (1997) limited their theory of hypnotic involuntariness predominantly to ideomotor action (see also Lynn *et al.*, Chapter 5, this volume). In our view, any candidate theory of hypnosis must attempt to explain the full range of hypnotic responding or experiencing (for similar comments, see Woody and Sadler, Chapter 4, this volume); accounts that target subsets of items may be accounts of these phenomena only, and not of the domain of hypnosis. We aim for flexible theories that can explain a broad range of core hypnotic phenomena. But we keep in mind Woody and Sadler's (Chapter 4, this volume) point that 'it is possible that any particular explanatory scheme applies well to only certain types of suggestion or content and is difficult to extend to the others' (p. 90).

6.2.2.2. Level 2: responding across and within items

We can take a broader view and (like most other researchers) consider sets of these items as representing particular suggestion types. Woody *et al.* (2005; see also Woody and Barnier, Chapter 10, this volume) identified four major types of hypnotic items: direct motor, motor challenge, cognitive-delusory and post-hypnotic amnesia. As noted above, these items differ not only in their focus (motor versus cognitive-delusory), nature of request (direct versus challenge), requested response (positive versus negative) and dominant associated experience (involuntariness versus reality), but also in their apparent difficulty (Balthazard and Woody, 1985; see also Kihlstrom, Chapter 2, this volume). Woody *et al.* (2005) argued that these item types represent distinct building blocks of hypnotic response, which implies that different suggestions may require slightly or even

significantly different explanations (for a full discussion of their component approach, see Woody and Barnier, Chapter 10, this volume).

Within this level of explanation, we can focus not only on responding across different types of items, but on responding within items. All hypnotic suggestions contain essentially the same phases and a dynamic time course that are often overlooked. Although researchers have tended to focus on just the test phase of hypnotic items—when the suggestion's effect is measured—all hypnotic items typically contain three phases: the suggestion (onset); test; and cancellation (offset). Using an innovative 'dial method', which measured moment to moment variations in subjects' experience, McConkey and his colleagues mapped theoretically important variations across and within all three phases of representative items of the major suggestion types: direct motor, motor challenge and cognitive-delusory items (e.g. McConkey *et al.*, 1999a,b, 2001; for a review, see McConkey, Chapter 3, this volume).

For the purposes of our discussion, the most relevant finding from McConkey and Barnier's 'dial' research is that participants can be quite strategic and active during the suggestion phase of a hypnotic item, yet still experience their response during the test phase as compellingly involuntary or subjectively real. Barnier and McConkey's (1998a; see also Barnier and McConkey, 1998b, 1999a, 2001) research on post-hypnotic suggestion illustrates the same point, but with the added caveat that this process of active construction of a compelling experience can be spread over time and contexts both inside and outside the hypnotic setting. For instance, Barnier and McConkey (1998a) gave highly hypnotizable subjects a post-hypnotic suggestion to mail one postcard to the hypnotist every single day and tested its success over a period of 4 months—much like suggestions given by clinicians for long-lasting effects outside the therapeutic setting. Interestingly, the suggestion was more effective when subjects were told explicitly when it would be canceled (when the hypnotist contacted them again) than when they were not. These and related findings highlight the need to consider all phases of a hypnotic item—suggestion, test and cancellation—both inside and outside the formal hypnotic setting.

6.2.2.3. Level 3: state and trait

Finally, at the broadest level, we can view responding to hypnotic items as embedded within an overall *hypnotic* context. In response to a hypnotic induction procedure and specific suggestions (mere words), some but not all individuals show altered or exaggerated behavior and/or experience. We in the field of hypnosis still debate why, or even if, this context leads to altered behavior and experience; why some, but not other, individuals are so responsive; and how different individuals, within and across hypnotizability levels, achieve their hypnotic experiences. These issues of *state* and *trait* have generated enormous discussion and disagreement in the field (e.g. Kirsch and Lynn, 1995, 1998a,b; Kihlstrom, 1997, 1998, 2005), as well as within the chapters of this book (see Kihlstrom, Chapter 2; McConkey, Chapter 3; Woody and Sadler, Chapter 4; Lynn *et al.*, Chapter 5; Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14), and we cannot ignore them. We suggest, as others have, that there is value in linking to ideas and research outside the domain of hypnosis to help answer the questions of state and trait.

6.2.3. Questions to address

The overall question we are grappling with asks: what is the source of the hypnotized person's 'feelings of hypnosis'? To understand source, we need to address at least five other important questions. First, what is the 'switch' for hypnotic responding? By this we mean: what is it about the hypnotic context, the hypnotic induction procedure or the mere words of hypnotic suggestion that lead to the exaggerated responses of hypnosis? Second, why do some suggestions produce distortions in feelings of control and other suggestions produce distortions in feelings of reality? Third, relatedly, what allows individuals to be quite strategic during the suggestion phase of a hypnotic item, but still experience it as involuntary or real during the test phase? Fourth, why do individuals differ in hypnotic ability and their hypnotic experiences, not only across the hypnotizability spectrum, but within hypnotizability levels? Finally, why are some suggestions more difficult than others; what drives this difficulty factor and how does it interact with hypnotic ability?

6.3. Generations of cognitive theories

Past generations of cognitive theories and theorists have influenced the answers we propose to these questions. As McConkey noted in Chapter 3, ‘knowledge, attitudes and skills in a field are transmitted directly and indirectly, not only via its literature, but also via the generations of researchers that come and go’ (p. 65). In this section, we briefly and selectively review two sets of influential accounts: the ‘dissociation’ accounts of Hilgard, Kihlstrom and Bowers, and the ‘interactionist’ accounts of Sutcliffe, Sheehan and McConkey. Since these accounts have been described in detail elsewhere, we point simply to the elements most important to our theorizing.

6.3.1. Dissociation theories: Hilgard, Kihlstrom and Bowers

Hilgard (1991, see also 1977, 1979, 1992) argued that ‘most phenomena of hypnosis can be conceived of as dissociative’ (p. 84), where dissociation is defined broadly as involving interference with or loss of familiar associative processes. He noted that qualitatively similar dissociations are seen in clinical phenomena of functional paralyses, conversion symptoms, somnambulisms, amnesia, fugues and multiple personalities, which of course gave rise to dissociation theory in the first place (Hilgard, 1991). Hilgard’s ‘neodissociation’ theory (so named to differentiate it from older theorizing about clinical phenomena) was intended as a more general theory than simply that of hypnosis—he aimed for broad links across hypnosis and other areas of psychology—but it originated from hypnosis research and, according to Hilgard (1991), is most clearly demonstrated by hypnotic phenomena and processing.

Hilgard (1991, 1992) outlined a model of cognitive control involving multiple cognitive processing systems or structures arranged in hierarchical order. For our purposes, the essence of Hilgard’s theory is that for the most part, the control of behavior during hypnosis is identical to its control outside hypnosis (although hypnotized individuals may be less likely to initiate

new lines of thought or action independently; Hilgard, 1992). Basically, everything operates as normal. However, subject’s experience of their behavior—their monitoring of it—is impaired: ‘the control being exercised is not consciously experienced’ (Bowers, 1990, p. 164; cited in Woody and Sadler, Chapter 4, this volume). According to Hilgard (1991), the control of response production is split off from conscious awareness, that part of the ‘executive ego’ or ‘central control structure’ that monitors responding, by an amnesic barrier.

Bowers (1990, 1992; see also Woody and Bowers, 1994; Woody and Sadler, Chapter 4, this volume) labeled Hilgard’s theory ‘dissociated experience’ to differentiate it from his own version of neodissociation theory, ‘dissociated control’. Whereas dissociated experience ‘refers to changes in how subjects experience their behavior’ (p. 86), dissociated control ‘refers to changes in the underlying control of behavior’ (p. 86) (Woody and Sadler, Chapter 4, this volume). Kihlstrom (1984, 1998, 2007; see also Chapter 2, this volume) extended Hilgard’s analysis to, in Hilgard’s (1991) view, link it more closely with modern cognitive psychology. In particular, Kihlstrom analyzed a wide range of hypnotic (as well as clinical, nonhypnotic) phenomena within the neodissociative framework, pointing to the ways in which monitoring, but not control, is influenced by hypnotic suggestion. These phenomena include, but are not limited to: post-hypnotic amnesia, source amnesia, hypnotic analgesia, hypnotic deafness, hypnotic blindness, hypnotic emotional numbing, post-hypnotic suggestion (e.g. Kihlstrom, 2007; Chapter 2, this volume).

Overall, we take two things from Hilgard’s and Kihlstrom’s (as well as Bowers’s) theorizing. First, the distinction between *control*, which involves the voluntary initiation and termination of thought and action (Kihlstrom, 2007), and *monitoring*, which involves accurately representing objects and events in phenomenal awareness (Kihlstrom, 2007). Second, the proposal that whereas hypnotic and nonhypnotic responding may be controlled in essentially the same way, monitoring of hypnotic responding is disrupted (but see Woody and Sadler, Chapter 4, this volume).

6.3.2. Interactionist theories: Sutcliffe, Sheehan and McConkey

The interactionist theories of Sheehan and McConkey focus on the ways in which individuals actively use their cognitive skills and personal traits to create and maintain a subjectively compelling hypnotic experience in a complex social situation. This perspective, with its roots in the interactionism movement within personality theorizing (Bandura, 1978; Mischel, 1979; see also Sheehan and McConkey, 1982) and with its emphasis on the interaction of cognitive, social and experiential processes, is consistent with the desire for a more integrative approach to examining hypnotic phenomena (Kihlstrom, Chapter 2; McConkey, Chapter 3, this volume). Sheehan and McConkey's theoretical approach was also influenced strongly by the work of Sutcliffe (1960, 1961), who argued that hypnosis depends upon the qualities that the person brings to the hypnotic setting, and the ability of the hypnotist to establish and maintain conditions favorable to the person creating and believing in the suggested experiences. Importantly, Sutcliffe (1961) argued that 'the distinguishing feature of hypnosis appears to be the subjective state; and the main feature of this state is the hypnotized subject's emotional conviction that the world is as suggested by the hypnotist' (p. 200).

More recently, Sheehan (1991) emphasized the aptitude factors and contextual influences that interact to shape the outcome of hypnotic suggestion. In particular, he argued that hypnotic subjects actively attempt to construct the experiences suggested by the hypnotist. Central to Sheehan's (1991, 1992) theory is the concept of 'motivated cognitive commitment', which reflects the hypnotic subject's positive motivation to co-operate with the hypnotist: 'not simply to conform, but rather to process the hypnotist's communications in a cognitively active way in order to solve the problem of responding appropriately to suggestion' (Sheehan, 1991, p. 527). The notion of motivated cognitive commitment acknowledges that hypnotic subjects vary in their motivation to become involved in hypnotic suggestions, and in the ways that they achieve their suggested

experiences. In collaboration with Sheehan and independently, McConkey (1991) emphasized the cognitive strategies that hypnotized individuals employ to resolve the multiple problems posed by the hypnotic setting. In particular, he underscored their ability to manage conflicting information and influences in a way that allows them to 'both experience the effects suggested by the hypnotist and to develop a belief in the genuineness of those experiences' (p. 561; see also McConkey, Chapter 3, this volume).

In their work, Sheehan and McConkey focused in particular on the individual pathways to and profiles of hypnotic responding, especially of highly hypnotizable individuals (e.g. Sheehan and McConkey, 1982; McConkey, 1991; Sheehan, 1991, 1992; McConkey and Barnier, 2004). To do this, they developed two distinct methodologies: the Experiential Analysis Technique (EAT), an inquiry that involves the subject and an independent experimenter watching a videorecording of the hypnosis session to cue subjects about their subjective experiences associated with particular suggestions (for more, see Sheehan, 1992; McConkey, Chapter 3, this volume), and the 'dial method', a moment to moment measure of subjective experience such as the strength or reality of a suggested effect across the phases of the items (as noted above; for a full review, see McConkey, Chapter 3, this volume).

Using these methods, Sheehan, McConkey and their colleagues have identified a range of cognitive styles. Whereas some subjects tend to concentrate on the literal message of the hypnotist, other more independent subjects are willing to change the suggestion to suit their preferences; for example, hallucinating blue rather than the suggested orange. Subjects can also be more or less constructive in how much they embellish strategies to experience the suggested effect. For example, in a detailed analysis of the responses of two excellent (virtuoso) subjects across a range of hypnotic suggestions, McConkey *et al.* (1989) described one subject as having a concentrative style, whereby she listened to suggestions and waited for the effects to happen, and the other as having a constructive style, whereby she actively worked on the suggestion she received, deciding how she could go about experiencing them (see also Sheehan and McConkey, 1982; McConkey

and Barnier, 2004; McConkey, Chapter 3, this volume).

We take two things from Sutcliffe's, Sheehan's and McConkey's theorizing. First, hypnotic subjects are sentient agents in the hypnotic context; they are motivated and cognitively prepared to co-operate, to become actively involved in hypnotic suggestions and to develop a strong commitment to the communications of the hypnotist. Second, although hypnotic subjects may be very active and involved in constructing their response to hypnotic suggestions, they still experience their response as compelling: as outside their control and/or as subjectively real.

6.4. Cold control and discrepancy-attribution: two new perspectives on theory and research

In this section we introduce two new accounts of hypnotic behavior and experience: Dienes and Perner's (2007) cold control theory of hypnosis, and Barnier and Mitchell's (2005) discrepancy-attribution theory of hypnotic illusions. Like our theoretical predecessors, we identify alterations in subjective experience as the fundamental phenomena of hypnosis. Whereas Hilgard, Kihlstrom and Bowers focused more on the division in awareness that leads to controlled action and constructed experiences feeling either involuntary or real, and Sutcliffe, Sheehan and McConkey focused more on the nature of the hypnotized subject's constructive processing, the precise mechanism by which active construction yields to compelling experience remains unclear. We aim to explain why mere words produce such compelling—surprisingly easy, surprisingly real—effects.

Our two distinct accounts share a number of features, and that is why we present them together in this chapter. Both accounts draw heavily from areas outside the domain of hypnosis, particularly from cognitive psychology—cold control draws from recent theorizing about conscious awareness and, specifically, higher-order states (Rosenthal, 1986, 2002, 2005), while discrepancy-attribution draws from recent theorizing and research on memory illusions such as false recall and false recognition

(Whittlesea, 1997; Whittlesea and Williams, 1998, 2001; Whittlesea and Leboe, 2000; Leboe and Whittlesea, 2002; Goldinger and Hansen, 2005; Whittlesea *et al.*, 2005). Both accounts make a distinction inspired by Hilgard's influential one between *control* and *monitoring*—cold control distinguishes between *first-order states* and *second-order states*, while discrepancy-attribution distinguishes between *production* and *evaluation*.

Using these distinctions, our accounts agree that hypnotized individuals actively construct (control) their hypnotic behaviors and experiences more or less as they do in a nonhypnotic context. And our accounts agree that hypnotized individuals develop inaccurate attributions (monitoring) about their hypnotic responses. Thus, our two accounts challenge theories that claim that the hypnotic subject is genuinely passive, such as in Woody and Bowers's (1994) theory of dissociated control (see also Woody and Sadler, Chapter 4, this volume), or that subjects' behavior is automatically produced by a generalized implementation intention, such as in Kirsch and Lynn's (1997) response set theory (see also Lynn *et al.*, Chapter 5, this volume). Cold control and discrepancy-attribution theories agree that hypnotized individuals can be very active in creating their hypnotic responses, but fail to recognize their own hand in their experiences.

In providing these two theories: first, we spell out the distinction they make between control and monitoring; second, we describe the background of the theories in cognitive psychology; third, we set out the account; fourth, we summarize empirical data that support the account; and finally, we point to remaining issues and directions for future research. In a separate section we consider the relationship between our two theories and with other current theories. Although our theories share a number of features, they are distinct, and that is why we present them separately first before considering their integration.

Before we turn to our first theory, we should note that our aim is to develop flexible theories that can explain a broad range of core hypnotic phenomena. And we believe that a good theory should be evaluated on a number of dimensions including: (1) testability; (2) empirical validity;

(3) parsimony; (4) internal consistency; (5) extensiveness; (6) usefulness in practical applications; and (7) acceptability among those who test it through research and practice.

6.4.1. Cold control theory of hypnosis

6.4.1.1. Control versus monitoring

Cold control theory begins by drawing a distinction between *being in a certain mental state* and *being aware of being in that state*, which is related to Hilgard's distinction between *control* and *monitoring*. A first-order state is a state about the world. A higher-order state makes one aware of being in another state. Thus, a second-order state makes one aware of being in a first-order state (and a third-order state makes one aware of being in a second-order state). For example, a visual representation of a cat caused by looking at a cat is a first-order state. Thinking 'I see a cat' is a higher-order state, specifically a second-order state. Similarly, forming an executive intention 'make the arm rigid' is a first-order state. Thinking 'I intend to make my arm rigid' is a second-order state.¹ English language does not often clearly distinguish first-order and higher-order states. If I say 'Bill is seeing a cat', typically I mean both Bill formed a visual representation of the cat (first-order state) and Bill is aware of seeing a cat (second-order state). If I say 'Bill is intending to go to the cinema', typically I mean both he formed an intention (first-order state) and is aware of having that intention (second-order state). To be clear about possible mechanisms of hypnosis, we need to be clear on this distinction. Theories of hypnosis may postulate that during hypnosis the process of forming first-order states (e.g. imagining a cat or intending to lift an arm) is compromised. Alternatively, control may be intact, but the process of forming higher-order states (awareness of intending or awareness of imagining) is

compromised (cf. Woody and Sadler, Chapter 4, this volume). When applied to awareness of intentions, compromising second-order states generates theories of the sense of involuntariness; when applied to perception, it generates theories of the sense of reality.

To see how ambiguous language can be, consider Woody and Szechtman's (2007) exploration of 'feelings of knowing'. At first sight, a 'feeling of knowing' is a higher-order state, if the phrase means a feeling with the content that one knows (as implied, for example, by their citation of the metamemory literature). On the other hand, a feeling of knowing might be a 'strength of belief'—not a phrase describing a higher-order state at all, but rather the degree of intensity with which a first-order state is held (or perhaps whether a first-order state is one of believing rather than supposing—still a first-order property). We will sharply distinguish first- and higher-order properties in order to explain hypnotic phenomena.

6.4.1.2. Background to the cold control theory

The theoretical background for cold control comes from three sources: (1) cognitive theories of control, like Hilgard (1977, 1991) and Norman and Shallice (1986), already familiar to readers of the hypnosis literature; (2) hypnosis research showing that hypnotic subjects can be very active (in dissociation and interactionist theories, as discussed above, as well as in socio-cognitive approaches; e.g. Spanos, 1986; Comey and Kirsch, 1999); and (3) the higher-order thought (HOT) theory of consciousness, which we now discuss.

In the 1980s, Rosenthal and Carruthers independently took up an idea that can be traced to Aristotle; namely that a mental state's being conscious arises because of actual (e.g. Rosenthal, 2005) or potential (e.g. Carruthers, 2000) higher-order states. A mental state (e.g. of seeing) makes us conscious of some state of affairs, in the minimal sense of 'conscious of'; for example, the seeing that occurs in a blindsight patient's blind field. What the blindsight patient lacks is an awareness of being in the mental state of seeing. Indeed, Rosenthal (2002) argued that a mental state, like seeing, is a conscious mental state only when we are conscious

¹ The intention to 'imagine a cat' is a mental state about a mental state but does not satisfy our requirement for a higher-order state because it does not assert that one is in a certain state. Thus, 'imagine a cat' is a first-order intention. Thinking 'I am intending to imagine a cat' is a higher-order state. Our definition of higher-order state corresponds to David Rosenthal's (2005) requirement for a higher-order thought in his theory of consciousness.

of being in that mental state. In other words, it sounds bizarre to say the blindsight patients can consciously see but are not conscious of seeing. When we are conscious of seeing, we see consciously.

On Rosenthal's (2002) account, we are conscious of mental states by having thoughts about those states. A thought about being in a mental state is a second-order thought, because it is a mental state asserting one is in a (first-order) mental state. For example, the first-order state could be seeing that 'the object in front of me is black'. Because of this first-order state, I am conscious of the object in front of me being black. Because of the second-order thought that 'I see that the object in front of me is black', I am conscious of the first-order state of seeing. The seeing is then a conscious mental state: we consciously see that the object in front is black. In sum, according to HOT theory, a mental state is a conscious mental state when the person has a HOT to the effect that they are in that (first-order) mental state (for elaboration see Rosenthal, 2002; for a review, criticism and discussion of HOT theories of consciousness, see chapters in Gennaro, 2004).

The distinction between first- and higher-order states urged by HOT theory has proven useful in understanding the difference between conscious and unconscious perception, memory and learning (e.g. Dienes and Perner, 1999). For example, the distinction between having knowledge and being aware of having that knowledge appears to mark a real division in different types of learning, implicit and explicit (e.g. Dienes *et al.*, 1995; Dienes and Scott, 2005; Fu *et al.*, 2007). Similarly, the distinction between seeing and being aware of seeing marks two qualitatively different types of perception, subliminal and conscious perception, as determined subjectively (Merikle *et al.*, 2001).

As applied to control, the intention 'Lift the left arm!' is not a conscious intention unless there is the HOT that 'I am intending to lift my left arm'. Due to this HOT, one is conscious of the intention. In principle, HOT theory allows intentions (including those used in executive control) without HOTs of intending. The theory allows unconscious intentions; thus, on the theory, unconscious intentions should sometimes happen. This prediction is counter-intuitive and

contradicts the theories of Norman and Shallice (1986) and Jacoby (1991).

6.4.1.3. Cold control theory of hypnosis

The cold control theory of hypnosis (Dienes and Perner, 2007) states that a successful response to hypnotic suggestions can be achieved by forming an intention (a command in the executive system) to perform the action or cognitive activity required, without forming the HOTs about intending that action that would normally accompany the reflective performance of the action. That is, cold control is executive control without appropriate HOTs. According to cold control theory, hypnotic responding does not involve changes to first-order representations (intentions can function as normal) but a change in a specific type of second-order representation—the awareness of intending. The change involves avoiding accurate HOTs as well as entertaining inaccurate HOTs (e.g. 'I did not intend this action').

Because the executive system at the level of first-order intentions is postulated to function normally², according to cold control theory, anything that can be done outside of hypnosis can be performed as a hypnotic suggestion. This contrasts with theories that claim executive function is compromised in hypnosis (Woody and Bowers, 1994; Jamieson and Woody, 2007; see also Woody and Sadler, Chapter 4, this volume); on these accounts, responses demanding executive resources should be especially difficult to carry out as hypnotic suggestions. For example, tasks that require the subject to overcome a habitual response or that involve distractions should be difficult on these accounts. According to cold control, such actions are just as easy whether they are hypnotic suggestions or performed normally. Conversely, according to cold control, one should not be able to do anything

² The claim rests on the assumption that HOTs of intending are not needed for first-order intentions to do their jobs. Indeed, it is difficult to specify what on earth a HOT of intending is useful for. HOTs are sometimes relevant to control; for example, one may form the intention 'If I see the word, I will say another word', predicating an action on a HOT of seeing. Other than such cases, first-order intentions typically do not require HOTs, including HOTs of intending.

as a hypnotic suggestion that one cannot do otherwise. For example, memory, strength or ability to remove pain should be no better than normal following a hypnotic suggestion. The difference between hypnotic and nonhypnotic suggestions is only in how the response is subjectively felt; for a hypnotic suggestion, at least some of the intentions that support the (motor or cognitive) action are unconscious, so the action will seem to happen in part by itself. This difference can make a big difference; in a nonhypnotic context, without the interesting subjective experiences, a subject may not put in the first-order effort to, for example, lift their arm in an arm levitation suggestion.

The theory begs the question of how HOTs of intending could be systematically avoided in a hypnotic context when they arise spontaneously otherwise. The sustained performance of an intentional act, particularly an unusual act or an act unusual in context, typically leads to HOTs of intending. So how are they avoided in hypnotic responding? One answer is to point out that HOTs of intending, like most thoughts, will be influenced by beliefs and expectations. Thoughts tend to trigger other consistent thoughts. So the expectation that 'this act will happen by itself' will tend to trigger the thought that 'I am not making it happen'. Note that this is a specific theory of how expectations produce hypnotic experiences. It is not that expectations directly cause the suggested outcomes, like hallucinations, analgesia, and so on. On cold control theory, these outcomes must be produced by intentions (e.g. the intention to imagine an object to be hallucinated; the intention to engage in strategies that modulate pain); all the expectation does is obstruct an accurate HOT of intending. Thus, expectations need not produce hallucinations in inappropriate contexts; expectations will only apparently produce hallucinations when the person already has intended to imagine the suggested object. The expectation can remove the awareness of intending and thus leave the person believing the imagined object is real. But without the intention there would be no hallucination, even with the expectation of hallucinating. Accounts that postulate a direct effect of expectation on first-order states rather than second-order states (e.g. Kirsch, 1991) have difficulty explaining

why a 100 percent expectation to see an object rarely leads to seeing that object in normal clear viewing conditions, but a less than 100 percent expectation in a hypnotic context may produce an hallucination.

Research supports Dienes and Perner's (2007) proposal that expectations affect second-order states. In signal detection terms, it has long been known that expectations typically affect the bias parameter rather than sensitivity. Whereas sensitivity reflects the underlying first-order representation (people can have high sensitivities while claiming not to see at all; cf, blindsight, Weiskrantz, 1997), bias reflects second-order representations (when the shift in bias reflects people's changing beliefs about what they have seen; for discussion, see Dienes, 2004; Lau and Passingham, 2006). In line with this, Naish (1985) reported that highly hypnotizable subjects changed their bias in a signal detection task to a greater extent than lows when given expectancy information that the signal was more likely; highs' subjective experiences were also influenced by their expectations, as evidenced in their verbal reports. Dienes and Perner (2007) suggest that expectations can affect second-order states of intending as well as of perceiving.

6.4.1.4. Cold control and the hypnotic state

Cold control theory is neutral as to whether there is a special state of hypnosis that (causally) enhances hypnotic responding. Perhaps there are special states in which HOTs are especially easily decoupled from first-order states such as intentions. Perhaps alcoholic intoxication is one such state, for example. But cold control does not require such states. Braffman and Kirsch (1999) argued that hypnotic inductions lead to only small increments in hypnotic behavioral responding, and such increments as they do cause may be accounted for by the increase in expectation accompanying them. Further, Baker and Kirsch (1993) argued that anything can be an induction, even the giving of a sugar pill or gas said to induce hypnosis, so long as it heightens expectations.

Cold control occurs in contexts other than those defined as hypnosis. For example, in certain religious and spiritual contexts, people

produce behavior they believe they are not intending, such as talking in tongues or speaking with the voice of a spirit. For example, the State Oracle of Tibet is a monk consulted about difficult decisions of state. He is taken over by the deity Pehar Gyalpo. From the monk's point of view, it is Pehar Gyalpo who gives advice not the monk himself. In esoteric traditions of martial arts, a master may control a student's 'ki' at a distance, causing the student to stop breathing, jump in the air, fall unconscious or become immobile. These different contexts produce cold control with different subjective states: in some contexts, the subject is relaxed (typically, hypnosis) and in others not (students of the martial arts master may be attacking him very vigorously); in some contexts, the subject is passive with reduced spontaneous thoughts (one type of report from hypnotic subjects) and others not (the State Oracle of Tibet will actively deliberate on important matters); in some contexts, attention is focused inwards (typically, hypnosis) and others not (martial arts). It is unclear whether any special subjective state is uniquely associated with cold control (Dienes and Perner, 2007). The 'switch' to engage in cold control may merely be the recognition of an appropriate context; and subjective feelings associated with this context may be produced because they are believed appropriate (cf. Henry, 1985, cited in Lynn and Kirsch, 2006, who found people's experiences of hypnotic trance matched their expectations).

6.4.1.5. Cold control and the experience and domain of hypnosis

Cold control theory uses appropriate unconscious intentions, and the subsequent feelings of involuntariness, to explain all aspects of hypnotic experience. For example, according to Dienes and Perner (2007), the feeling of reality of a hallucination is produced by the fact that the (merely imagined) image is nonetheless felt to appear of its own accord (cf. Bentall, 1990). The step from the image seeming to arise of its own accord to thinking one is seeing rather than imagining is an extra step, but perhaps one readily made. Similarly, if one lifts an arm intentionally, but does not believe one is intentionally lifting the arm, the conclusion that the arm is very light follows naturally. Thus,

subjective feelings of reality of hypnotic suggested stimuli may occur as a direct consequence of cold control.

One advantage of cold control is that it is relatively easy to see how it could produce both motor and cognitive responses in both direct and challenge suggestions. Both motor and cognitive actions can be produced normally by first-order intentions, either those actions directly suggested, or those actions necessary to pass challenge suggestions (cf. Woody and Sadler, Chapter 4, this volume). The active nature of all responses is consistent with findings mentioned above that subjects can be very active during the suggestion phase of a hypnotic item, but experience their responses as involuntary during the test phase. However, this does not mean that all hypnotic responses should be equally easy or that there must be one factor underlying hypnotizability. Dienes and Perner (2007) illustrate how HOT theory can help to explain the relative difficulty of different hypnotic items by, for example, distinguishing those suggestions that require control of second-order thoughts or just third-order thoughts (for more, see Dienes and Perner, 2007, whose analysis in this case illustrates the distinctive contributions of HOT theory to understanding hypnosis). Also, the difficulty in carrying out the first-order intention is plausibly related to the difficulty in avoiding accurate HOTs of intending. This simple idea has yet to be tested.

6.4.1.6. Cold control and hypnotizability

A person may be highly hypnotizable because their expectations can shift their HOTs more than average. Evidence for this possibility comes from studies showing that expectations are particularly likely to change biases in highs rather than lows, as in the Naish (1985) study cited above. Both Polczyk and Pasek (2006) and Woody *et al.* (1997) found that hypnotizability was correlated with expectancy-induced changes in particular sensations (including, in Woody *et al.*'s study, feelings of alcoholic intoxication), albeit in different directions. Whereas Polczyk and Pasek (2006) reported that expectancy-induced changes were associated with difficult hypnotic items, Woody *et al.* (1997) reported that they were associated with easy items (note

that Woody *et al.* argued that responsiveness to expectancies is a poor explanation for most hypnotic responses). One interpretation is that cold control is particularly important for difficult or easy items, respectively. However, in these studies, participants will have varied in the extent to which their expectations were manipulated as well as in the extent to which a given change in expectancies produced changes in subjective states. For the purposes of assessing cold control, we are interested only in the latter variability. Future research could first calculate the relationship between expectation and sensation change within each subject, and then relate this index with success on different item types. This may indicate whether particular hypnotic items rely on expectation-induced cold control more than others. Although suggestive, this and other possibilities for a cold control view of hypnotizability (and related constructs) have yet to be elaborated within the theory and tested.

6.4.1.7. Research that supports cold control theory

Cold control could be falsified by several types of findings. If hypnotized subjects were impaired in executive function tasks or unable to carry out suggestions involving executive activity, cold control theory would be wrong. Conversely, if subjects had greater executive or other abilities when carried out as hypnotic suggestions than when performed nonhypnotically, cold control theory would be wrong. Further, if suggestions involving an altered sense of reality could be passed without any sense of involuntariness, cold control theory would be mute in explaining successful response in those cases. We divide the relevant existing research into evidence that supports Dienes and Perner's (2007) proposals that hypnotic suggestions involve successful executive control and that hypnotic responses do not involve any extraordinary abilities. We then consider other new research avenues.

Hypnotic suggestions can involve the subject engaging in executive function tasks. For example, a standard suggestion used in stage hypnosis, and that can be reproduced in the laboratory (Evans, 1980), is the suggestion to forget a number, such as the number 'four'. The subject

will count, for example, '1, 2, 3, 5, 6' fingers on a hand. In overcoming a strong pre-existing habit (counting the sequence of digits must be one of the strongest habits we have), a successful response involves executive control. Sackheim *et al.* (1979) found that with strong motivation instructions for blindness, a highly hypnotizable subject performed significantly *below* chance in reporting the emotion shown in photographed faces (but see Bryant and McConkey, 1999). Similarly, Spanos *et al.* (1982) reported that highs who were given a suggestion to forget certain words in any task they were given during the session produced those words at a level below baseline on a word association task. This requires executive control (as well as awareness of the purpose of the task), because the existing associations that would be produced automatically must be suppressed.

Bertrand and Spanos (1985) gave subjects a list of three words in three different categories, and highly hypnotizable subjects, when suggested, could selectively forget one word from each category. Subjects recalled on a category-by-category basis, and must have inhibited the to-be-forgotten word when recalling each category. Such inhibition requires executive functioning. In a striking example, Raz and colleagues (e.g. Raz *et al.*, 2002) found that highs who were given a suggestion that they could not read words (the words would appear as a foreign language) eliminated or modulated the Stroop effect. These results suggest that the habit of reading was suppressed (though the effect has been hard to replicate in a number of other laboratories³).

Executive control is required for novel actions and in overcoming strong distractions. And virtually any arbitrary behavior can be hypnotically suggested despite the fact that such behavior might be novel to the person, at least novel in context, and many hypnotic suggestions require the person to ignore some salient aspect of the situation (e.g. analgesia or amnesia suggestions). In sum, the evidence supports the claim that many hypnotic responses are under executive control, a central assumption of cold control theory.

Similarly, decades of research have shown that hypnotic suggestions do not endow the subject with abilities the subject could not

express equally well otherwise. It is now well accepted that suggestions for greater strength or endurance have only motivational effects readily equaled by motivational instructions (e.g. Barber, 1966). Similarly, McConkey and Sheehan (1995; see also McConkey *et al.*, 1998) reviewed evidence that hypnotic rather than nonhypnotic suggestions for enhanced memory do not actually produce better overall memory. Consistently, cold control theory asserts that whatever intentions are useful for remembering can be employed in nonhypnotic as well as hypnotic contexts (e.g. see Barnier, 2002a). More controversially, cold control theory also predicts that highs should be able to produce analgesia just as effectively in or out of the hypnotic context. In both contexts the same pain control strategies can be used, the only

difference being that in the hypnotic context the pain reduction would feel more like a 'happening' than a 'doing'. This prediction was supported by Milling *et al.* (2002; but see Miller and Bowers, 1993; see Spanos, 1986, and commentaries for debate on whether hypnotic analgesia is as or more effective than the use of intentional cognitive strategies).

Cold control, although one process, does not require that all subjects respond by the same means. Indeed, as noted above in our description of interactionist theorizing and research, there is more than one way to respond successfully to hypnotic suggestions (McConkey, 1991, Chapter 3, this volume; Sheehan, 1991, 1992; see also McConkey and Barnier, 2004). These different cognitive styles can be implemented with cold control; subjects can vary in the exact intentions they formulate to achieve a suggested effect, and which and how many of these intentions they can act on while preventing appropriate HOTs of intending. The better subjects are at cold control, the greater the variety of intentions they should be able to implement without relevant HOTs. Indeed, Sheehan and McConkey (1982) found highs more likely than lows to respond constructively to suggestion.

³ Hypnotic elimination or modulation of the Stroop effect has generated significant attention in recent years. Raz and his colleagues reported that highly hypnotizable subjects successfully enacted a post-hypnotic suggestion to alter visual and lexical processing and eliminate the Stroop effect. They argued that the post-hypnotic suggestion prevented reading at the primary processing level and that subjects' performances were strategy-free (Raz *et al.*, 2002; see also Raz *et al.*, 2006). In seven experiments and two case studies at the University of New South Wales, Sydney, Lynette Hung and Amanda Barnier recently attempted to replicate and explore hypnotic elimination of the Stroop effect; they explored the impact of suggestion type, the time of suggestion test, the role of strategy, the phenomenology of subjects' enactments and the maintenance of suggested effects. Hung and Barnier's (2004, 2005) key finding was a dissociation between subjects' experiences of reading and their performance on the Stroop task. Subjects strongly claimed to not see, understand or read the target words, but still showed a robust Stroop effect, even when they employed naturally motivated or suggested attentional focusing strategies. Although a few highly hypnotizable subjects showed some modulation and, even occasionally, elimination of the Stroop effect, Hung and Barnier failed to find evidence of a strong group effect on Stroop performance. Notably, those highs who altered Stroop performance also did so on waking tests; and all subjects tested in hypnosis showed a lower level of Stroop interference than is usually reported in the literature. This implies that processes other than hypnotic suggestion may be at work in such research. We are aware of work in at least three other laboratories attempting, so far unsuccessfully, to replicate hypnotic elimination of Stroop interference (but see Raz *et al.*, 2006). Given the level of interest both inside and outside hypnosis in Raz *et al.*'s (2002) initial report, this area needs more attention, including closer comparisons of the procedures and conditions that generate or fail to generate an effect.

6.4.1.8. Issues to resolve and future research

Research that shows subjects have greater first-order abilities with hypnotic rather than nonhypnotic suggestions is *prima facie* evidence against cold control. For example, Derbyshire *et al.* (2004) found that subjects told they will feel pain in a hypnotic condition experienced more pain than when told to imagine pain in a nonhypnotic condition. In this and other similar studies showing differences between hypnotic and nonhypnotic conditions (see Oakley, Chapter 14, this volume), the challenge to cold control needs to be strengthened by dealing with two methodological issues (as pointed out by Lynn *et al.*, 2007). First, the hypnotic and nonhypnotic suggestions need to be identical otherwise there is a confound between what subjects are being asked to do and whether hypnosis is involved. Second, the problem of subjects 'holding back' in the nonhypnotic conditions because of demand characteristics needs to be avoided (and can be with appropriate

experimental design; see Sheehan and Perry, 1976). There is already research in progress in various labs on this matter that could support or contradict cold control theory.

Cold control theory, in principle, also makes specific predictions concerning the effect of disruption to frontal areas of the brain. According to the theory, executive intentions are formed and implemented normally under hypnosis but higher-order awareness of these intentions is avoided. Thus, selectively disrupting areas of frontal cortex involved in the implementation of executive intentions (e.g. supplementary motor area, *c.f.*, Zhu, 2004) should impair responsiveness to hypnotic suggestion. Conversely, selectively disrupting areas involved in maintaining accurate higher-order states of awareness should increase responsiveness to suggestion. Lau and Passingham (2006) compared two conditions involving a visual detection task where visual sensitivity was identical but people differed in the proportion of times they believed they saw the stimulus. That is, the conditions of presentation involved equivalent first-order visual states but different degrees of accuracy in second-order states (thoughts that one saw). Functional magnetic resonance imaging (fMRI) indicated that it was activation in the mid-dorsolateral prefrontal cortex that distinguished conditions. Lau and Passingham argued that this area was responsible for producing accurate higher-order states. It is possible the same area is responsible for the accuracy of HOTs of intending as well as of perception, as the dorsolateral prefrontal cortex is not in general modality specific. We are in the process of functionally disrupting the dorsolateral prefrontal cortex by repetitive transcranial magnetic stimulation (rTMS) to begin exploring how the induced impairment of frontal areas is related to subjective and objective degrees of response to hypnotic suggestion.

Szechtman *et al.* (1998) also provided interesting evidence concerning brain regions involved in the formation of higher-order states. They found that Brodmann area 32 in the right anterior cingulate was activated both when highs heard an auditory stimulus and when they hallucinated hearing it, but not when they merely imagined hearing it. Szechtman *et al.*

suggested that Brodmann area 32 is involved in experiencing something as external. That is, the region may be involved in forming HOTs that one perceived rather than just imagined. On cold control theory, such thoughts occur inaccurately in hypnosis because first the image is felt to be involuntary, which facilitates the thought that the image is real (*cf.* Woody and Sadler, Chapter 4, this volume). In contrast, if inaccurate thoughts of perceiving can occur in hypnosis together with accurate HOTs of intending, then cold control cannot explain such hallucinations. Hypnotic subjects often report control. However, some control is consistent with feelings of involuntariness in other respects. One may unconsciously intend to lift the arm, but consciously intend to modulate the speed. One may unconsciously imagine an object, but consciously change some of its characteristics. There is some control, but there may also be enough involuntariness to trigger thoughts of external reality (perception) rather than of imagining. Future research could take a fine-grained look at the relationship between involuntariness and other changes in experience. It remains to be determined whether cold control theory really has a handle on hypnotic changes in feelings of reality.

A final area for research is the precise mechanism(s) for avoiding accurate HOTs and producing inaccurate HOTs. The difficult task for highs is to maintain a first-order state together with a higher-order state that denies the first-order state. While Dienes and Perner (2007) suggest that expectation plays a key role in this process, cold control theory does not yet completely spell out how an individual might avoid accurate HOTs while producing inaccurate HOTs. HOT theory makes salient the distinction not only between first-order and second-order states (responsible for conscious awareness) but also between second-order and third-order states (responsible for introspective awareness). Dienes and Perner (2007) used these distinctions to analyze the requirements of different hypnotic tasks and different hypnotic experiences. Cold control theory motivates a continuing fine-grained analysis of the contents of different orders of thoughts in order to understand hypnotic response.

6.4.1.9. In summary

Dienes and Perner's (2007) cold control theory extends Rosenthal's (2002, 2005) HOT theory of consciousness to hypnosis. It draws a distinction between *being in a certain mental state* and *being aware of being in that state*, which in some ways parallels Hilgard's distinction between *control* and *monitoring*. According to cold control, hypnosis 'happens' because subjects lack awareness (the HOTs) of controlling their responses. HOTs are disrupted by expectancies of involuntariness. As we discuss in our integration section below, cold control theory utilizes a common theme from some previous theories: the active agent who misattributes the causes of his actions. The fact that cold control theory captures a central theme from other contemporary theories without being identical to any of them is perhaps something to recommend it. It isolates an old yet core idea, weds it to HOT theory, and examines the utility of this new combination in explaining hypnosis. In turn, HOT theory provides new theoretical apparatus to analyze hypnotic responses (cold control versus cold perception versus empty heat; first- versus second- versus third-order states; Dienes and Perner, 2007). We turn now to introduce our second theory of hypnosis.

6.4.2. Discrepancy-attribution theory of hypnotic illusions

6.4.2.1. Control versus monitoring

Discrepancy-attribution theory begins by drawing a distinction between *production* and *evaluation*, which is related to Hilgard's distinction between *control* and *monitoring*. Suppose that during hypnosis, we give you a hypnotic suggestion that you will see a cat in the room; i.e. a positive visual hallucination. If you are a talented hypnotic subject (with the component ability for such a difficult cognitive-delusory item; Woody and Barnier, Chapter 10, this volume) you may well 'see' what you believe at that moment to be a real cat in the room. Many commentators agree that the mental event corresponding to 'seeing' a cat during hypnosis is very similar to the mental event corresponding to imagining a cat outside of hypnosis (e.g. Hilgard, 1977, 1991; Oakley, 1999, Chapter 14, this volume; Haggard *et al.*,

2004; Kihlstrom, 2007, Chapter 2, this volume; McConkey, Chapter 3, this volume; but see Woody and Sadler, Chapter 4, this volume). According to discrepancy-attribution theory, what distinguishes hypnotic from nonhypnotic events is an attributional process. The hypnotic image of the cat is attributed to the external world and reality, whereas the imagined image of the cat is attributed to just that, imagination.

The process of creating the image of the cat is production; making sense of it is evaluation. According to Barnier and Mitchell (2005), the production of responses is slightly easier in hypnosis. This slight change in production leads to substantially altered evaluation. Of course, this view of hypnosis—that it may alter the production versus evaluation of hypnotic responding to different degrees—is not new (Hilgard, 1977, 1991; Spanos, 1986; Kihlstrom, Chapter 2, this volume; Woody and Sadler, Chapter 4, this volume). Discrepancy-attribution theory makes a similar conceptual distinction, but draws on an entirely different literature to justify and apply this distinction to hypnosis. More importantly, it conceptualizes production and evaluation as two aspects of the same system and uses the distinction between them to explain hypnosis in an entirely new way.

6.4.2.2. Background to the discrepancy-attribution theory

Apart from theory and research by (among others) Hilgard, Kihlstrom, McConkey and Sheehan, the theoretical background for discrepancy-attribution comes from the domain of cognitive psychology and memory theorizing and research.⁴ Specifically, Barnier and Mitchell's (2005) theory draws heavily on and extends Whittlesea and colleagues' recent theory of memory attributions and illusions. According to Whittlesea's (2002) 'Selective Construction and Preservation of Experience' (SCAPE) theory, accessing memory (whether via recall or recognition) involves two stages. Stage 1 is production,

⁴ Although social cognitive views of hypnosis are relevant to both theories presented in this chapter, space precludes their detailed review (see instead Lynn *et al.*, Chapter 5, this volume). We note their specific relevance as we lay out our accounts and we make detailed comparisons with them in our theoretical integration section below.

whereby images or ideas are accessed and brought to consciousness. Stage 2 is evaluation, whereby the products of cognition and the production process are automatically and continuously evaluated. According to Whittlesea (2002; see also Whittlesea and Williams, 1998, 2001), memory performance and memory attributions can be explained by a *discrepancy-attribution hypothesis*. As practiced users of our memory systems, we have specific, often context-dependent, implicit expectations of the ease of memory processing—processing fluency—that may be violated in certain circumstances. Individuals are motivated to seek the most natural or salient explanation for unexpectedly more (or less) fluent production. When surprising ease is unconsciously attributed to a source in the past, for instance, the person experiences a conscious feeling of familiarity (Whittlesea *et al.*, 2005).

To illustrate, in one experiment on false recognition, Whittlesea and Williams (2001) presented participants with a list of words to study. At test, both studied (old) and unstudied (new) words were presented, but each word was preceded by a sentence that provided a semantic context for that word. In the critical condition, new words were presented in either a *predictive* or a *nonpredictive context*. For example, in the predictive context, participants read the sentence ‘the stormy seas tossed the ...’, and after a pause made a recognition judgment of the new word ‘boat’. The sentence provided a context consistent with the target word ‘boat’, where ‘boat’ was an appropriate ending. In the nonpredictive context, participants read the sentence ‘she read in a newspaper about a ...’, and then made their recognition judgment for ‘boat’. The context of the sentence was not especially consistent with boat, and boat was an appropriate but not highly predicted ending. When new words were presented in a predictive context they were likely to be judged as old words and characterized by a sense of familiarity.

Whittlesea and Williams (2001) argued that the phrase ‘the stormy seas tossed the ...’ sets up an *indefinite expectation* of what is to come. That is, the participants do not know for sure that the sentence will end with the word ‘boat’, but can guess that it will be one of ‘boat’, ‘ship’, ‘raft’, etc. The critical feature of this indefinite expectation

is that when the word ‘boat’ appears, the word is processed surprisingly fluently. In other words, there is a discrepancy between expectancies for production and actual production. Since the surprising ease of processing must be attributed to some source, participants unconsciously (mis)attribute processing ease to having seen the word ‘boat’ in the study list.

Participants in these studies misattribute increased processing ease to the past (false recognition) and not (correctly) to the predictive context because, according to Whittlesea and Williams (2001), unconscious attribution (or evaluation) is made to whatever source is most natural or salient. A predictive context is an unusual and not especially salient way to increase processing ease. Also, the pause between the predictive context and the presentation of the target item makes the real source of increased ease less obvious. The recognition question is much more salient. This question suggests that the increased ease of processing may be because this item appeared in the recent past; that it is familiar. So the illusion of familiarity is produced by an inaccurate evaluation of the production of a mental event; increased processing ease is attributed to familiarity and not to the predictive context.

6.4.2.3. Discrepancy-attribution theory of hypnotic illusions

Barnier and Mitchell’s (2005) discrepancy-attribution theory of hypnosis states that hypnotic illusions can be understood within the same theoretical framework as memory illusions (note, when we refer to illusions here we mean all hypnotic responding, rather than just specific cognitive-delusory phenomena such as hallucinations). As Whittlesea and Williams’s (2001; see also Whittlesea *et al.*, 2005) work demonstrates, in false recognition a very slight increase in the ease with which a novel event can be brought to mind—produced—can profoundly increase the degree to which that event is mistakenly judged—evaluated—as having occurred in the past. Similarly, Barnier and Mitchell (2005) argue that in hypnosis the ease with which hypnotic responses (behavioral acts or mental events) can be produced may have a profound effect on the way in which these responses are evaluated.

Let's return to our hallucinated cat to capture the essence: If outside of hypnosis we ask you to see a cat in the room, constructing that mental event takes a certain degree of effort. Barnier and Mitchell (2005) believe that within hypnosis seeing the cat is slightly easier, it requires marginally less effort. So, you can produce the image of the cat just a little bit more easily. This generates a discrepancy between the expected effort and ease of producing the mental image of the cat (based on your experiences outside of hypnosis) and the actual effort and ease of producing the mental image of the cat inside of hypnosis. This slight discrepancy—between your expectations of effort and ease and its actual effort and ease—makes the production of the image of the cat feel surprisingly easy. So quite a small quantitative change in ease may yield a large—surprising—qualitative effect. The sense of surprising ease influences the way in which you interpret the image of the cat. Outside of hypnosis, you would attribute (or evaluate) the cat to your imagination. But inside hypnosis, the sense of surprising ease causes you to attribute (or evaluate) the cat to reality. Interestingly, even partial or incomplete responses—whether an incomplete hallucination of a cat or partial experience of amnesia—still are evaluated as involuntary or real. We consider why in a moment.

Barnier and Mitchell (2005) argue that the hypnotic setting has the same influence on hypnotic responses as, for instance, a predictive context has on the processing of a target word in a recognition task. They believe that the hypnotic setting makes the production of a motor act or of a mental event surprisingly easy. The response is then attributed to the most salient or natural source, such as lack of control (an illusion of involuntariness) or reality of the imagined stimulus (an illusion of reality). The first important question to answer then is: what is it about the hypnotic context, the hypnotic induction procedure or the mere words of hypnotic suggestion, that leads to the exaggerated experiences of hypnosis? Why does the hypnotic context increase processing ease, even if only slightly?

6.4.2.4. What is the hypnotic state?

On Barnier and Mitchell's (2005) view, the hypnotic induction does not generate any major

qualitative changes in information processing; all aspects of normal cognitive functioning take place within hypnosis much as they do outside of it (for a similar conclusion based on neuroimaging evidence, see Oakley, Chapter 14, this volume). However, Barnier and Mitchell believe that certain (perhaps minor) quantitative changes in cognitive processing do take place in the hypnotic setting. In particular, suggested responses are easier to execute and goals are more easily achieved within hypnosis than outside of it. Why?

It is useful to consider first why responding under normal circumstances may be difficult (where 'normal' circumstances are characterized by specific expectancies about the qualities of performance; see below). Under certain circumstances, executing any response can be difficult and experienced as effortful. For example, teenagers find concentrating on their homework difficult and effortful. They have a huge range of more interesting things they could be doing: playing video games, watching television, calling a friend or going shopping. The target activity is of low interest and the competing activities are of high interest. It is the activation of the target goal and inhibition of competing goals, both of which are cognitively demanding, that leads to the experience that homework is effortful.

According to Barnier and Mitchell's (2005) analysis, there are two ways in which hypnosis may aid response production. First, the 'good hypnotic subject' wishes to comply with the hypnotist. As noted above, hypnotic subjects show a cognitive preparedness—'natures predisposed' in White's (1937, 1941) earlier language—to interpret and respond to the hypnotist's communications (McConkey, 1991; Sheehan, 1991, 1992; see also McConkey, Chapter 4, this volume). Subjects' willingness to prioritize the hypnotist's suggestion over reality, which Shor (1959, 1962) called a 'shift in generalized reality orientation', should make the target response more salient and receive particular attention from the individual. This provides an additional source of activation compared with the nonhypnotic setting. Second, the hypnotic setting is typically one of concentration and relaxation. As a result, competing thoughts are kept to a minimum. One major feature of the

hypnotic induction process, at least the traditional induction procedure, is to banish all thoughts from the mind and to listen exclusively to the hypnotist's voice. And then there is the dimly lit room with few salient features, which further focuses attentional resources.

So in this highly motivating, yet impoverished context, the suggested goal is highly activated and competing thoughts are reduced. In essence, although a response may be no less physically or cognitively demanding in hypnosis, there is perhaps less indecisiveness about whether or not to execute it. This indecision would, under normal circumstances, increase difficulty and perceived effort. Another way to say this is that we lose or at least reduce our 'no go' option (Logan, 1994, 2002).

6.4.2.5. Why such different attributions?

At the beginning of this chapter, we asked: why do some suggestions produce distortions in the feeling of control and others produce distortions of reality? According to Barnier and Mitchell's (2005) account, responses in hypnosis may be surprisingly easy and this ease must be attributed to some source. The attribution is made to the most obvious or natural source. The true source is, of course, the impoverished environment and the fact that the participant and hypnotist are colluding in the activation of the suggested response. However, at least for highly hypnotizable people, this true source is generally not recognized and the increased ease must be attributed to something else. Given cultural notions of hypnosis (e.g. McConkey, 1986; Spanos *et al.*, 1987; Green *et al.*, 2006), it is not surprising that individuals make the attributions that they do.

For instance, if raising your arm following an arm levitation suggestion is surprisingly easy, a natural conclusion for you to draw in that setting is that it was outside of your control and it just happened. If imagining a cat following a visual hallucination suggestion is surprisingly easy, a natural conclusion for you to draw in that setting is that the cat is real. This is similar to research on mere exposure, where subjects attribute increased fluency to either liking or recognition depending on the context; specifically, whether they are asked 'do you like it?' or 'do you recognize it?' (e.g. Bornstein and D'Agostino, 1994). Hypnotized

subjects' attributions of involuntariness and reality are 'natural' because certain attributions—to hypnosis, to the hypnotist, to reality—are made more salient than others—attributions to one's own efforts and to the way the setting supports them. And highly hypnotizable people are particularly unlikely to recognize the true source of surprising ease because they are cognitively invested in, via processes of motivation, attention and absorption, believing in the suggested experiences.

Although the fundamental psychological mechanism for both types of illusions is the same—and shared with memory illusions—the subjective experience is very different. This is because, through a lifetime of experience, we have learned that certain experiences demand certain causal explanations. And cultural notions of hypnosis make certain attributions more likely (McConkey, 1986; Spanos *et al.*, 1987; Green *et al.*, 2006). So this fact, that surprising ease is attributed to different sources depending on the circumstances, helps to explain why some hypnotic items are associated more strongly with a sense of involuntariness, while others are associated more strongly with a sense of reality. We might expect then that if you manipulate the context or cues on which attributions are based, you should be able to shift the person's experience.

A reasonable question to ask is: why would such a small discrepancy between the expected ease and the actual ease of producing a response or constructing a mental event have such a profound impact on subjective experience? One answer is that, since everything we do in hypnosis is normal nonhypnotic behavior, and since we have thousands, if not millions, of trials of doing exactly these sorts of things (moving our limbs, seeing things in the world, remembering events), we have specific expectations for what they feel like. Barnier and Mitchell (2005) base this argument, in part, on Blakemore, Frith and Wolpert's analysis of abnormalities in the awareness of actions, especially in neuropsychiatric disorders (e.g. Wolpert, 1997; Blakemore *et al.*, 2000, 2002; Wolpert *et al.*, 2001). These researchers describe two types of internal models of the motor system: the 'forward model' and the 'inverse model', which represent aspects of one's body, its actions and its interactions with

the environment. Importantly, these models make particular predictions about responses including: (1) the outcome of motor commands, which is compared with the desired outcome; and (2) the sensory consequences of movement, which are compared with actual sensory-perceptual feedback. Blakemore *et al.* (2002) wrote that: ‘we seem to be unaware of the results of the comparison between the predicted and intended outcome of motor commands, and the comparison between the predicted and actual sensory feedback, *as long as the desired state is successfully achieved*’ (our italics; p. 237). So slight perturbations will be detected and must be explained. Thus, the qualities of hypnosis are the result of violated, rather than met, expectations (cf. Kirsch and Lynn, 1997; Kirsch and Braffman, 2001; see also Lynn *et al.*, Chapter 5, this volume).

A related question is: will any manipulation that makes production slightly easier result in a compelling hypnotic experience? During a hypnotizability testing session, Wickless and Kirsch (1989) surreptitiously manipulated the external reality of six bogus items (e.g. for a suggestion to see the color red they turned on a low wattage red light). For these items, producing the hypnotic response was presumably easier because the reality of the suggested stimulus was manipulated by the experimenters. Following these manipulations, Wickless and Kirsch then tested hypnotizability with the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer and Hilgard, 1962). Subjects for whom external reality was manipulated scored higher on the SHSS:C than other subjects, which implies that aiding suggested responses with a real stimulus helped subjects to pass later SHSS:C items, at least behaviorally. However, it is not clear that this manipulation led to compelling experiences of subjective reality. For example, in his review of a program of research that compared objectively versus subjectively real hypnotic events, McConkey (Chapter 3, this volume) described experiments in which hypnotized subjects were given a metal ball to hold and suggested that it would heat up. Whereas for some subjects the metal ball was empty and inert, for other subjects the metal ball contained chemicals that mixed to heat the ball 7–10°C. Subjects given the empty, inert ball reported as compelling

and real an experience of the ball heating up as subjects given the chemical ball. What is more, the former subjects never become suspicious about the source of their hypnotic experience, whereas the latter subjects often did. In the absence of true absorption and involvement in the hypnotic interaction, which is characteristic of highly hypnotizable people, an external manipulation of the ease of processing may not be sufficient to yield compelling hypnotic experiences. In other words, you need more than just a stimulus flashed on the wall for subjects to believe that it is real (for a further analysis of the consequences of manipulated reality, see McConkey, Chapter 3, this volume).

We also noted earlier that even incomplete or partial responses, especially for difficult, cognitive-delusory suggestions, are still experienced as real. This may be because of the very high benchmark of objectively real experiences. Consider how difficult it might be outside of hypnosis simply to imagine to a realistic level a negative visual hallucination such as seeing two boxes instead of three (as in the SHSS:C). It is perhaps not surprising that the modest increase in ease brought about by hypnosis—even though it yields an incomplete or partial experience, such as seeing the third box indistinctly rather than not at all—generates enough of a discrepancy for the hallucination to be evaluated as real. One needs only a slight discrepancy between expected and actual ease of production, even if the baseline of ease is very low. Future research could focus on the relationship among difficulty, expectancies, completeness of responding, attributions and subjective feelings of hypnosis.

6.4.2.6. How active construction yields to compelling experience

Barnier and Mitchell’s (2005) use of the distinction between production and evaluation helps to explain how subjects can be strategic and active during the suggestion phase of a hypnotic item, yet still experience their response during the test phase as compellingly involuntary or real. According to discrepancy-attribution theory, even if the production of a hypnotic response takes time and effort on the part of the subject (e.g. McConkey, 1991, Chapter 3, this volume; Sheehan, 1991, 1992; McConkey and Barnier, 2004), as long as there is a discrepancy between

the expected and actual ease of its production, a surprising sense of fluency will be generated and, in turn, attributed to the most natural or salient source (lack of control or stimulus reality). It does seem a little contradictory that hypnotic subjects will acknowledge that they were actively involved in the production of their hypnotic responses, yet still describe the response itself in compelling terms (e.g. Barnier and McConkey, 1995, 1996, 1998*b*, 1999*a,b*, 2001), especially given popular views and expectations that hypnosis just happens. But, according to Whittlesea's (2002) SCAPE theory, expectancies for production are implicit. Thus, subjects need not see a contradiction between their active efforts and their involuntary or real experiences. For the generation of surprising fluency, Barnier and Mitchell's (2005) account requires only a slight discrepancy between the expected and actual ease of production. To the extent that the hypnotic state makes response production slightly easier, it does not matter how much (or how little) effort a subject initially invested in producing their response.

6.4.2.7. Individual differences, item difficulty

Within the discrepancy-attribution account, why might individuals differ in hypnotic ability and their hypnotic experiences? High hypnotizable people may be: (1) those who are particularly influenced by the hypnotic setting in terms of focusing on the target response and limiting alternatives—reduced 'no go'—and so experience a larger discrepancy between hypnotic and nonhypnotic contexts; and/or (2) those who are especially sensitive to discrepancies and so would be expected to show cognitive illusions in nonhypnotic domains such as memory.

These possibilities also help us to understand why some suggestions are more difficult than others. Barnier and Mitchell's (2005) account suggests that illusions result from detailed implicit expectations derived from normal conditions, which are then violated in hypnosis. Most people have clear expectations for motor movements under normal conditions. For instance, how our arms move. Technically speaking, we have a relatively clear idea of the relationship between the voluntary initiation of motor responses and the visual and kinesthetic feedback that accompanies

them. Also, motor responses may be more believable simply because they have more stimulus support (an arm that is moving) and less conflicting reality information. In contrast, we may have less clear expectations for cognitive alterations. For instance, our ability to imagine a cat. Also, seeing a cat may be less believable because it has less stimulus support (no cat in the room) but more conflicting reality information (an empty room when we open our eyes).

Given clear expectations, and the greater potential for discrepancy between expected and actual ease, it makes sense that involuntary motor responses are a common form of hypnotic illusion—almost everybody experiences simple ideomotor suggestions (McConkey *et al.*, 1996; Barnier and McConkey, 2004). For other types of suggestions and illusions, generating the discrepancy (and thus surprising ease) may depend on people's nonhypnotic experience with the underlying cognitive events. In other words, individuals may be susceptible to some but not other illusions depending on their particular skills or developmental history. For instance, someone who commonly engages in imaginative activity and has a clear idea (and thus expectation) of its nonhypnotic effort and ease may be more likely to be surprised by a slight change in effort and ease in hypnosis, and thus experience an illusion related to the imagined event, than someone who has little or no ability or tendency to imagine.

6.4.2.8. Research that supports discrepancy-attribution theory

Discrepancy-attribution could be supported by several types of research methods and research data. In line with the above discussion, we organize the relevant research into evidence that supports Barnier and Mitchell's (2005) proposals about the hypnotic state and about the time course of production and evaluation. We also point to research that is suggestive of how attributions may be altered, and of the source of individual differences and item difficulty.

Research supports the discrepancy-attribution view of the hypnotic state. Barnier and Mitchell (2005) suggested that particular features of the hypnotic setting make suggested responses slightly easier. They made three arguments. First, Barnier and Mitchell (2005) argued that hypnotic responses are produced in essentially the

same way as nonhypnotic responses. We have already addressed this above (in our discussions of previous cognitive theories and of cold control theory). But we note again here that there is a raft of experimental findings to support the conclusion that suggestion influences subjects' experiences rather than the cognitive processes themselves. Other telling illustrations include Bryant's work on hypnotic blindness, in which, for instance, highly hypnotizable subjects in hypnosis said they couldn't see words following a suggestion for blindness, but after hypnosis spelled these words consistent with having seen them (for a review, see Cox and Bryant, Chapter 12, this volume); Barnier and McConkey's work on post-hypnotic suggestion, in which, for instance, highly hypnotizable subjects who had been hypnotized and given a post-hypnotic suggestion to mail one postcard every day sent postcards for the same (often lengthy) period as control subjects who had not been hypnotized and were simply asked to send the postcards, but described their experiences quite differently—as compulsive (for a review, see McConkey, Chapter 3, this volume); and recent work by Hung and Barnier on hypnotic elimination of the Stroop effect, in which, for instance, highly hypnotizable subjects who were given either a hypnotic or post-hypnotic suggestion to see words as a foreign language or to not know the meaning of words reported that they could not understand words presented in a Stroop task, but still showed the Stroop interference effect.³ And in summarizing current neuroimaging findings on hypnosis, Oakley (Chapter 14, this volume) concluded that basic aspects of information processing (including pain perception, processing of sensory information and sense of agency over action) remain essentially normal after a hypnotic induction procedure.

Second, Barnier and Mitchell (2005) proposed that the hypnotic setting promotes, and within this setting hypnotized individuals show, qualities such as focused attention and cognitive preparedness. This is supported, for instance, by findings that within Stroop-type tasks, highly hypnotizable subjects make more efficient use of attentional strategies than lows (Dixon and Laurence, 1992; Rubichi *et al.*, 2005; for a review, see Laurence *et al.*, Chapter 9, this volume; but see Jamieson and Sheehan, 2004). This

view of hypnosis is also supported by findings that: hypnotized subjects feel strong rapport with the hypnotist, prioritize the hypnotist's message, counter pre-hypnotic expectations in favor of the hypnotist's suggestions and engage in selective encoding and retrieval of material consistent with the suggested experiences (McConkey, 1991; Sheehan, 1991; Burn *et al.*, 2001; see also McConkey, Chapter 3, this volume). Of relevance also, Hilgard (1992) argued that the 'usual initiative of the executive is lost' (p. 95), such that during hypnosis subjects do not 'independently undertake new lines of thought or action' (p. 95). This is consistent with Oakley's summary from neuroimaging findings that hypnosis is associated with 'physical relaxation, mental calming, attentional absorption and a reduction in spontaneous conceptual thought' (p. 52). Overall, these findings imply that the hypnotic setting is a highly motivating, yet impoverished, context in which the hypnotist and the subject work together to make the suggested response more salient and to keep competing thoughts to a minimum.

Third, Barnier and Mitchell (2005) proposed that although hypnotic responses are produced in essentially the same way as nonhypnotic responses, these aspects of the hypnotic state (attention, relaxation, cognitive preparedness) aid response production—they make responses slightly easier. This is supported by research, for example, on hypnotically suggested anomalous control. For instance, in a laboratory analog of 'alien control' of motor action, Haggard *et al.* (2004) used Libet's time estimation procedure to index participants' judgments of the time at which they experienced the occurrence of their own motor actions. When movements are produced voluntarily—when they are highly intentional and involve substantial pre-planning—the individual shows more anticipatory awareness than for movements that are produced involuntarily and lack preparation (Haggard *et al.*, 1999, 2002, 2004).

Twelve highly hypnotizable individuals used a clock display to report verbally as precisely as possible when their right index finger moved downward in contact with a response button (based on a procedure developed by Libet *et al.*, 1983). Subjects made time estimations under three conditions: voluntary movements, passive

movements (when the response button was moved from below and their finger moved passively) and involuntary ('anomalous') movements (the same as voluntary movements, but during hypnosis and following suggestions that these movements would be involuntary). The main measure was 'judgment error'; i.e. the time difference between a subject's actual finger movement and his or her report of it (negative judgment errors indicate anticipatory awareness). Whereas truly voluntary movements were judged at -79.5 ms, truly passive movements were judged at -49.0 ms. Hypnotic movements fell in between, at -61.0 ms, indicating less anticipatory awareness. This suggests that hypnotically controlled movements were slightly easier than nonhypnotic voluntary movements. As predicted by discrepancy-attribution theory, these unexpectedly easier movements were interpreted by subjects as involuntary.

The view that hypnosis aids response production is also supported by research on post-hypnotic amnesia. In a series of studies, Barnier and colleagues compared hypnotically created forgetting (post-hypnotic amnesia; PHA), with nonhypnotically created forgetting (directed forgetting; DF; for a review, see Barnier, 2004; see also Barnier and McConkey, 1999c; Barnier, 2002a,b; Barnier *et al.*, 2004c, 2007). In one experiment, high and low hypnotizables generated specific autobiographical episodes during hypnosis in response to cue words. After generating the first set of memories to list 1 cues, half the participants received a PHA suggestion to forget them and half received a DF instruction to forget them. They then generated a second set of memories to list 2 cues. After deinduction, subjects' memories were tested by free recall before (Recall 1) and then after a cancellation cue (Recall 2). On Recall 1, both PHA and DF groups recalled fewer list 1 than list 2 memories. And on Recall 2, both groups recalled additional list 1 memories after the cancellation cue. Notably, PHA created more forgetting of both list 1 and list 2 memories, as well as more recovery, than DF. Barnier's (2004) analysis identified features shared by PHA and DF, including recall patterns, disruptions in recall (not recognition) and a dissociation between explicit and implicit memory. This suggests that although both hypnotic and nonhypnotic forgetting may share

their (intentional and effortful) mechanism (e.g. retrieval inhibition), hypnotically controlled forgetting is slightly easier. As predicted by discrepancy-attribution theory, this unexpectedly easier forgetting is interpreted by subjects as involuntary.

This and other research supports the discrepancy-attribution view of the time course of hypnotic responses: participants can be strategic and active during the suggestion phase of a hypnotic item yet, because the result is produced with surprising ease, they still experience their response during the test phase as compellingly involuntary or real. We have already discussed McConkey and colleagues' 'dial' and EAT findings. Another example of this fascinating time course comes from a recent study conducted by Barnier and Coltheart. In a study that aimed to develop a laboratory analog of the neuropsychological condition of 'mirrored self-misidentification' (e.g. Breen *et al.*, 2000), they gave 12 very highly hypnotizable subjects a suggestion during hypnosis to see a stranger, not themselves, in a mirror: 'The mirror you will see will have properties of a normal mirror, with one major difference. The person you see in the mirror will not be you, it will be a stranger'. When one male participant opened his eyes to look in the mirror he said 'who's that, another person?'. He claimed that the person in the mirror was not him, but was copying him, and he looked around the room to find the person in the mirror, in a manner that reminds us of Orne's (1959) concept of 'trance logic'. During a postexperimental EAT inquiry, this subject described how he prepared to experience himself as a stranger as he listened to the suggestion. But then he said that he *really* thought the person in the mirror was someone else. In other words, this subject's active efforts to respond to the suggestion yielded to a compellingly real response.

6.4.2.9. Issues to resolve and future directions

Hypnosis research provides some directions for testing Barnier and Mitchell's other proposals: of how attributions may be altered, and of the source of individual differences and item difficulty. However, more work is needed to apply and validate discrepancy-attribution theory in these areas. We turn to consider these now.

Barnier and Mitchell (2005) argued that if you manipulate the context or cues on which attributions are based, you should be able to shift the person's experience. We've already noted above that whereas some items are associated strongly with involuntariness (and not necessarily reality), other items are associated strongly with reality (and not necessarily involuntariness). Research by Spanos (for a review, see Spanos, 1986, 1991, 1992) supports the general notion that by altering contextual cues you can alter subjective experience and bias the explanations that subjects reach to for their responses. In an attempt to test more directly the shift from involuntariness to reality and vice versa, Barnier and Mitchell recently gave high and low hypnotizables one of two versions of the hand lowering item of the SHSS:C (Weitzenhoffer and Hilgard, 1962). For half of the subjects, the suggestion focused on the ideomotor action of their arm moving down, and for the other half the suggestion focused on the reality of the heavy ball they imagined they were holding. Somewhat unexpectedly, highly hypnotizable subjects in both conditions rated their experiences as both involuntary and real. This lack of clear results may be due to the fact that the hand lowering item contains elements of ideomotor action (usually associated with involuntariness) and elements of hallucination (usually associated with reality). A manipulated shift in attributions may be more effective for items that fall more squarely in one or the other category of hypnotic item. A useful start would be to survey in detail the reported experiences of the entire database of hypnotic items (e.g. from standardized scales). This will help us to ensure a flexible theory that can explain the full range of hypnotic responses and experiences.

Barnier and Mitchell (2005) proposed two possibilities to account for individual differences in hypnotizability, as summarized above. Laying aside these alternatives, their theory makes a clear prediction that highly hypnotizable individuals should be especially susceptible to memory illusions of the kind investigated by Whittlesea and colleagues (Whittlesea and Williams, 2001; Whittlesea, 2002). In other words, one appropriate way to test discrepancy-attribution theory is to see whether highly hypnotizable individuals in particular show

fluency illusions in nonhypnotic memory paradigms. There is strong evidence that they do, for instance in research on hypnotic hypermnnesia and hypnotic pseudomemory (e.g. Nogrady *et al.*, 1985; Barnier and McConkey, 1992; McConkey *et al.*, 1998). Perhaps of most relevance, Neuschatz *et al.* (2003) tested high and medium hypnotizables in hypnotic and nonhypnotic conditions within Roediger and McDermott's (1995) Deese–Roediger–McDermott (DRM) memory illusion paradigm, in which participants learn lists of semantically related words (pillow, blanket, tired, bedroom), and then (like Whittlesea and Williams, 2001) are later asked to judge whether studied and unstudied words are familiar. Neuschatz *et al.* (2003) reported that highs and mediums in both hypnosis and waking conditions showed high rates of false recognition of unstudied, but critical words such as 'sleep' (they did not test low hypnotizables).

Although suggestive, these experiments were motivated more by forensic applications of hypnosis. More theoretically driven research is needed to test: (1) the relationship between hypnotizability and (nonhypnotic) memory illusions; (2) hypnotizable individuals' sensitivity to discrepancies and control over misattributions; (3) the relationship between hypnotizability and behavioral illusions; and (4) illusions inside and outside hypnosis. For instance, to test whether highly hypnotizable individuals are especially susceptible to memory illusions, individuals across the hypnotizability spectrum could be tested in: (1) Whittlesea and William's (2001, Expt 1) Predictive Context paradigm, in which participants are more likely to falsely judge an unstudied, 'new' word (e.g. broom) as studied, 'old' when it is preceded by a sentence (and a pause) that predicts the word ('she cleaned the kitchen floor with a ...'), rather than by a sentence that merely is consistent with the word ('she couldn't find a place to put the ...'); (2) Jacoby *et al.*'s (1989) False Fame paradigm, in which participants are more likely to falsely judge an old nonfamous name as famous after one presentation and a delay than a new nonfamous name; and (3) Roediger and McDermott's (1995) DRM paradigm (as in the Lynn *et al.* study). Such work would help to validate the discrepancy-attribution account.

To examine whether the relationship between hypnotizability and nonhypnotic illusions extends to behavioral illusions (since hypnotic responding involves behavioral acts as well as cognitive events), individuals across the hypnotizability spectrum could also be tested in procedures that reliably create behavioral illusions, such as Wegner *et al.*'s (2003) Clever Hands paradigm and Wegner and Erskine's (2003) Suppressed Volition paradigm. Of course, since Barnier and Mitchell's (2005) account predicts that susceptibility to illusions interacts with the hypnotic state, the most important test of discrepancy-attribution theory would be provided by an analysis of misattribution rates for memory and behavioral illusions across hypnotizability levels inside and outside hypnosis. For example, highs, mediums and lows could be tested using a selection of the most sensitive memory illusion and behavioral illusion procedures. Half of the participants could be tested following a hypnotic induction procedure and half tested in the absence of a hypnotic induction procedure. Ability factors should interact with the effects of the hypnotic context on response production and evaluation to create the strongest memory and behavioral illusions for highs in hypnosis.

Finally, Barnier and Mitchell (2005) argued that the difficulty level of suggestions may be explained by people's nonhypnotic experiences with the underlying motor acts or cognitive events (and thus the nature of their implicit expectancies). Research is needed to clarify the link between nonhypnotic performance (including individuals' developmental history, abilities and expectancies; J. R. Hilgard, 1970) and hypnotic performance (see also Laurence *et al.*, Chapter 9, this volume). For instance, above we offered the example of nonhypnotic imagination as one route to the hypnotic hallucination of a cat. However, research by Szechtman *et al.* (1998) suggests that not all highs need or use imagination to achieve hypnotic responses such as hallucinations. This implies that if hypnotic item difficulty is driven by experience, and individuals' nonhypnotic experiences are different (e.g. due to developmental histories or cognitive abilities), their pathways to nonhypnotic response production will be different, and so too will be their pathways to hypnotic response production.

Perhaps it doesn't matter how individuals produce their responses, as long as there is a discrepancy between the expected ease of (whatever method of) production and its hypnotic production. Our suggestions for interpreting hypnotizability within discrepancy-attribution theory (as well as cold control theory) need more work. Discrepancy-attribution suggests a mechanism by which hypnotic illusions are produced, but more time and research are needed to understand its fullest implications.

6.4.2.10. In summary

Barnier and Mitchell's (2005) discrepancy-attribution theory extends Whittlesea's (2002; Whittlesea and Williams, 2001) SCAPE theory of memory attributions and discrepancy-attribution hypothesis of false recognition to hypnosis. It draws a distinction between *production* and *evaluation*, which parallels Hilgard's distinction between *control* and *monitoring*. According to discrepancy-attribution, hypnosis 'happens' because subjects' responses are slightly easier in hypnosis, and this surprising ease is misattributed to the most salient explanation: involuntariness or reality. That is, hypnotic responses are the product of normal cognitive functioning under extraordinary conditions. The (motor or cognitive) system is not calibrated to operate within the hypnotic context—the responses are too easy. But it is not obvious to the system why this might be, so the normal attribution process identifies the most 'natural' source (at least in that setting) of this surprising ease. In this way, discrepancy-attribution theory departs from past theorizing within the domain of hypnosis, but it is entirely consistent with a large body of recent evidence from studies of the attributional processes that produce false recognition memory.

6.5. Theoretical integration

We have presented two new theories of hypnosis—cold control and discrepancy-attribution—both of which have their roots in contemporary cognitive theorizing. As noted above, these theories have salient common features as well as important differences. And, since both theories have been informed by previous generations of dissociative, interactionist and socio-cognitive theories, it is useful to compare our accounts

with current, competing accounts that draw on similar foundations: dissociated-experience theory (Hilgard, 1992; Kihlstrom, 1984), dissociated-control theory (Woody and Bowers, 1994; Woody and Sadler, Chapter 4, this volume) and response set theory (Kirsch and Lynn, 1997; see also Lynn *et al.*, Chapter 5, this volume). In this section, we consider how these five theories address: the source of the feelings of hypnosis, executive function and consciousness, the role of the hypnotic context and the role of expectancies.

6.5.1. Source of the feelings of hypnosis

In cold control, hypnotic experiences occur when a response is executed in the absence of any awareness (the HOTs) of having initiated that response. HOTs, which would normally accompany an intention, are disrupted by subjects' expectancies (Dienes and Perner, 2007). In discrepancy-attribution, hypnotic experiences occur when a response is executed slightly more easily in hypnosis. This slightly easier production generates a discrepancy that is attributed to local, salient factors (of involuntariness, of reality; Barnier and Mitchell, 2005). In dissociated-experience, hypnotic experiences occur when a response is executed normally, but control of that response is dissociated from conscious awareness (via an amnesic barrier) (Hilgard, 1992). In dissociated-control, hypnotic experiences occur when a response is directly activated by the hypnotist's suggestions (Woody and Bowers, 2004; Woody and Sadler, Chapter 4, this volume). Finally, in response set theory, hypnotic experiences occur when an expectancy directly activates a response set for the behavior (Kirsch and Lynn, 1997; Lynn *et al.*, Chapter 5, this volume).

Given their differences in genesis and focus, each of these theories looks to different supporting evidence. Cold control focuses on how context affects monitoring, so the most relevant comparison is between hypnotic and other nonhypnotic contexts that disrupt HOTs. Discrepancy-attribution focuses on aspects of the hypnotic setting that make production easier and that influence subjects' evaluations, as well as on nonhypnotic factors that relate to

hypnotic performance (both in terms of responding in the setting and specific expectancies for suggestions). So the most relevant comparison is between high and low hypnotizables tested in hypnotic and wake conditions (where highs in hypnosis should show the greatest effects on hypnotic and other illusions). Dissociated-experience focuses on the nature of dissociations (divisions of awareness) in hypnosis, so the most relevant comparison is between hypnotizable subjects' performance on tasks that index the effects of suggestion on levels of awareness (e.g. explicit versus implicit measures). Dissociated-control focuses on factors that influence the highly hypnotizable person's reduction in control during hypnosis, so the most relevant comparison is between highs' performance on theoretically relevant tasks (e.g. attentional tasks) inside and outside hypnosis. Finally, response set theory focuses on expectancy factors that automatically initiate responding, so the most relevant comparison is between hypnotic and nonhypnotic conditions that influence expectancies in comparable ways to produce hypnotic-like responses.

6.5.2. Executive function and consciousness

Our theories and other current theories differ in important ways in how they view the production of responses within the hypnotic setting. According to both cold control and dissociated-experience, the production of responses is under normal executive control (whereas discrepancy-attribution considers control to be slightly easier in hypnosis). But cold control and dissociated-experience differ in the way in which they explain failures in monitoring: whereas cold control postulates that HOTs of intending are themselves disrupted, dissociated-experience postulates a separate (dissociated) stream of experience with its own accurate HOTs or attributions; in dissociated-experience, the subject can become aware of their control (as shown by the hidden observer manipulation). Cold control is similar to Kihlstrom's (e.g. 1992) proposal that suggestions are carried out by forming intentions, but failing to be aware of those intentions (i.e. by cold control/misattribution). However, Kihlstrom (2007) does not

restrict himself to just cold control. By his view, dissociative responses may also come about, for instance, in negative hallucinations by having only first-order states of perceiving in the absence of accurate HOTs of perception, a perceptual analog of cold control (i.e. cold perception) or by having HOTs of seeing without any first-order states of seeing (a process Dienes and Perner (2007) called ‘empty heat’ because it involves HOTs without first-order states).

According to dissociated-control, and unlike cold control and discrepancy-attribution, the production of responses is not just easier, it is genuinely outside of the person’s control. Hypnotic responses are activated directly by the suggestion, such that subjects’ attributions of involuntariness are accurate (Woody and Bowers, 1994; see also Woody and Sadler, Chapter 4, this volume). Somewhat like dissociated-control, control of hypnotic responding is altered in response set theory, but the mechanism for this loss of control is subjects’ expectancies for responding (Kirsch and Lynn, 1997; see also Lynn *et al.*, Chapter 5, this volume).

A more recent and subtle form of dissociated-control theory, second-order dissociated-control (Jamieson and Woody, 2007), is more similar to cold control and discrepancy-attribution. According to second-order dissociated-control, the hypnotic response can be under executive control, but executive monitoring is disengaged. In detail, the theory postulates that hypnosis disrupts the process of matching the specifications of an action with the degree to which those specifications have been met. This is a different proposal than cold control. In cold control, one lacks specifically the thought that one is intending. Lacking that thought does not rule out a process of matching current behavior with the suggested specification. A match can occur between the first-order intention and the ongoing outcome without the person ever explicitly representing that they have the intention. Conversely, the process of matching could be disrupted while the person represents they do have the intention. In discrepancy-attribution, the process by which the match is made between production and specification is not disrupted. Indeed, in discrepancy-attribution, the matching process is normal; it is production that has been made slightly easier.

In second-order dissociated-control, unlike both cold control and discrepancy-attribution, the disengagement of the monitoring process should reduce the quality of the response. In particular, the subject may show perseveration—the response will be made even when it is no longer achieving the goal. In contrast, cold control and discrepancy-attribution allow any amount of flexibility that can be produced by first-order intentions.

In their chapter, Woody and Sadler (Chapter 4, this volume) align discrepancy-attribution with dissociated-experience and dissociated-control. They argue that discrepancy-attribution is similar to dissociated-control because both argue for reduced cognitive effort in responding. As noted above, in dissociated-control responses are driven, to some extent, by the environment (e.g. the hypnotist) rather than by executive functions; thus, cognitive effort is reduced. One important difference between discrepancy-attribution and dissociated-control is that whereas in dissociated-control, executive function is *substituted* by the hypnotist’s suggestion, in discrepancy-attribution theory, executive function is merely *supported* by it. In both cold control and discrepancy-attribution, the subject is in control of which responses should be emitted, and so the environment cannot automatically trigger responses (as suggested by dissociated-control).

6.5.3. Role of the hypnotic context

The role of the hypnotic context is another interesting point of comparison across these theories. Cold control follows response set theory (and other social cognitive theories) in allocating no special role to the hypnotic setting, and in seeing no theoretical value in defining an identifiable hypnotic ‘state’ (Kirsch and Braffman, 2001; see also Lynn *et al.*, Chapter 5, this volume). However, it does suggest that HOTs will be most often disrupted when subjects have good reason to expect their responding to be experienced differently. Because the hypnotic context may generate such expectancies, according to cold control, it has the potential to increase the experience of involuntariness. The hypnotic setting, though, is not special in this way. Cold control allows that many other settings (e.g. religious or psychic contexts), which produce

changes in expectations (about what responses will be experienced), might equally disrupt HOTs and therefore produce an increase in responding experienced as involuntary.

In contrast, discrepancy-attribution is more similar to dissociated-experience and dissociated-control in assigning particular value to the hypnotic setting and to a hypnotic state (see also Spiegel, Chapter 7; Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume). According to discrepancy-attribution, the hypnotic setting is influential in two ways. First, cognitive preparedness, concentrated focus and an impoverished setting (e.g. eyes closed, listening only to the hypnotist's voice), directs attention to the target response, and, second, the subject enters into a social contract to comply with the hypnotist's requests, a person with whom they feel strong rapport. It is these factors in combination that make responding easier, by creating a context that effectively reduces the number of possible alternative responses and that reduces the influence of each of those responses. The fact that self-hypnosis is possible suggests, of course, that the presence of a second person as hypnotist is not essential in this process (in self-hypnosis, the subject could still create for him or herself a context of focused attention to the target response; notably, hetero-hypnotizability and self-hypnotizability is a related, but not identical, ability; Orne and McConkey, 1981). Although the hypnotic setting is given more 'explanatory work' within discrepancy-attribution, the theory allows that hypnotic-like events can occur outside of hypnosis. Any situation in which responding is made surprisingly easy may have the potential to produce the subjective experience of involuntariness or reality, but perhaps only with additional components of attention, absorption and involvement (for a similar view based on neuroscience evidence, see Oakley, Chapter 14, this volume).

6.5.4. Role of expectancies

One final comparison worth making is in how these theories conceptualize the role of expectancies. In cold control, expecting something will happen by itself may later trigger the thought that it is happening by itself. This expectancy is quite

abstract and can be verbalized. In other words, the expectation can be represented as a belief in propositional form. One consequence of this is that it should be possible to manipulate subjects' expectancies by verbal instruction. This is quite different from the way in which expectancies play a role in discrepancy-attribution. According to discrepancy-attribution, the expectancies that produce hypnotic experiences are related to the detailed sensory predictions and feedback that normally accompany responding (Wolpert, 1997; Blakemore *et al.*, 2000, 2002; Wolpert *et al.*, 2001). Thus, I have an expectation of how my arm will feel when I raise it, but I cannot describe that expectation; specifically, I am unaware of comparisons between predicted sensory consequences and actual sensory feedback so long as my desired response is successfully achieved (Wolpert, 1997; Blakemore *et al.*, 2002). Similarly, I have an expectation of how vivid the image of an imagined cat will be, but I cannot describe that expectation either. According to discrepancy-attribution, these sensory-perceptual expectancies (or 'predictions' in the language of internal motor models) are the basis for hypnotic experience, specifically, the discrepancy between expectancies about ease of production and its actual ease. These detailed expectancies should be immune from instructional manipulation (although, of course, instructions can be expected to affect hypnotic responding to the extent that they are taken to be part of a suggestion or are translated into suggestions; Weitzenhoffer, 1974). For example, I may know that raising my arm might feel different, or even easier than normal, within the hypnotic context. However, that knowledge will not prepare me for the actual experience itself, which is accompanied by extremely detailed sensory information that is very specific to the response.

Like cold control and discrepancy-attribution, response set theory sees expectations as crucial (Kirsch and Lynn, 1997; Lynn *et al.*, Chapter 5, this volume). But the mechanism by which expectancies produce hypnotic experience is quite different across these theories. Unlike response set theory, in cold control and discrepancy-attribution the expectancy does not produce the entire hypnotic experience. In cold control, it merely disrupts the HOTs of the intention that produced the suggested activity

and feelings; the hypnotic experience comes about because the subject experiences themselves making a response that they did not intend to make. In discrepancy-attribution, the expectations are not heightened in hypnosis; it is the match between production and the nonpropositional expectation that is important.

6.5.5. Towards a broader integration

Can all of these positions be accommodated within a single (perhaps multifaceted) overarching theory of hypnosis? Perhaps cold control, discrepancy-attribution, dissociated-experience, dissociated-control and response set theories are all correct in some respects, but apply to different subjects, different hypnotic items or different subjects enacting different hypnotic items under different circumstances (see also Woody and McConkey, 2003; McConkey, Chapter 3, this volume). Certainly, it seems possible that some hypnotic responses might be produced by alterations of control, some by alterations of monitoring and some by alterations of both control and monitoring. Indeed, all of these mechanisms may play a role simultaneously to produce a single hypnotic experience.

6.6. Implications and future directions for the field of hypnosis

In sketching some implications of cold control and discrepancy-attribution theories for the field of hypnosis, we adopt Reyher's (1962; see also Barnier, 2002*b*; Oakley, Chapter 14, this volume) distinction between intrinsic and instrumental hypnosis. Intrinsic research focuses on the phenomena and nature of hypnosis itself, whereas instrumental research uses hypnosis as a tool to investigate phenomena outside its immediate domain. And we distinguish these areas of research focus from applications of hypnosis.

6.6.1. Implications for intrinsic hypnosis

What do we offer intrinsic research on hypnosis? In describing our accounts above, we laid out hypnosis research that supports cold control and

discrepancy-attribution, as well as issues to resolve and future directions. Thus, these theories offer new ways to organize existing research and new questions to motivate the next generation of research. These theories also: connect hypnotic and nonhypnotic processes; make clear, testable predictions for the locus of hypnotic effects; suggest new avenues for correlates of hypnosis; and offer a fresh take on hypnotic items and hypnotizability scales. For example, in terms of the locus of hypnotic effects, cold control identifies monitoring processes as most important, particularly those processes responsible for maintaining accurate HOTs of intending. In contrast, discrepancy-attribution identifies features of the hypnotic setting that aid response production, violated expectancies as the source of surprising ease and local contextual/suggestion factors as the determinant of attributions. These features are empirically verifiable, and these analyses can be extended inside and outside the domain of hypnosis.

In terms of new correlates, cold control directs researchers to how expectancies change biases in experience, and whether people have control over the accuracy of their HOTs in different contexts. Discrepancy-attribution directs researchers to processes of absorption and attention (see also Laurence *et al.*, Chapter 9; Oakley, Chapter 14, this volume), sensitivity to discrepancy and susceptibility to (hypnotic and nonhypnotic) illusions given an individual's developmental history. In terms of hypnotic items and hypnotizability scales, discrepancy-attribution suggests that item difficulty is not an artifact, but may represent particular building blocks of hypnotic response (i.e. ability to experience particular kinds of illusions), that hypnotic items may be categorized and related in terms of the core experiences that they engender, and that if susceptibility to memory and behavioral illusions predict hypnotic susceptibility, then new forms of hypnotizability measures may be possible.

6.6.2. Implications for instrumental hypnosis

What do we offer instrumental research? Since at least the 1930s, researchers have taken advantage of the rigorous experimental control of hypnosis paradigms to create laboratory models

of basic processes relevant to psychopathology (e.g. Kihlstrom, 1979; Barnier, 2002a; see also Cox and Bryant, Chapter 12, this volume). Cold control and discrepancy-attribution promise new contributions to this tradition. For instance, post-hypnotic amnesia and clinical amnesias share a compelling phenomenological experience; forgetting is experienced as dramatic and outside of the individual's control (Kihlstrom and Schacter, 1995; Barnier, 2002a). According to discrepancy-attribution theory, hypnosis is one context in which controlling responses, such as forgetting, is slightly easier. This slightly easier production is surprising (discrepant) and leads to an attribution of a lack of control over memory. In other words, the circumstances of hypnosis effectively transform intentional forgetting into forgetting experienced as unintentional and uncontrollable. Certain clinical disorders may provide the circumstances for a similar transformation. Just as there may be nothing especially hypnotic in the production of post-hypnotic amnesia, but something uniquely hypnotic in its evaluation, there may be nothing particularly 'disordered' in the production of clinical forgetting, but something uniquely disordered in its evaluation.

In recent years there has also been a surge in the instrumental use of hypnosis in the context of neuroscience investigations of pathological and nonpathological phenomena (e.g. Rainville *et al.*, 1997; Szechtman *et al.*, 1998; Halligan *et al.*, 2000; for a review, see Oakley, Chapter 14, this volume). Cold control and discrepancy-attribution offer guidance to these investigations as well. For instance, since cold control theory sees hypnotic and nonhypnotic control of responding as equivalent, it claims no particular benefits for the use of hypnosis in producing and studying first-order states (e.g. of pain, of hallucination). However, certain individuals, such as highly hypnotizable people, may be especially skilled in producing certain first-order states, and selection of such individuals is crucial for neuroscience work. More importantly, comparisons of hypnotic and nonhypnotic performance of tasks, in which awareness of intending is manipulated, will be very useful for neuroscience investigations of higher order states, and in understanding the nature of consciousness generally.

6.6.3. Implications for applied hypnosis

Finally, what do we offer clinical and other applications of hypnosis? On both accounts, hypnosis does not generate responses that we could not generate without hypnosis (see also Killeen and Nash, 2003), although discrepancy-attribution allows for slightly easier response production. But hypnosis alters the experience of responding. Thus it would make sense to tailor suggestions to take advantage of this impact. For example, in their postcard study of post-hypnotic suggestion, Barnier and McConkey (1998a) found that although the post-hypnotic suggestion was no more effective than a simple request to mail the postcards, subjects' experiences were worlds apart. Barnier and McConkey (1998a) suggested that a post-hypnotic suggestion (or indeed any hypnotic suggestion) may help to manage or create an experiential readiness for change and the maintenance of that change. To illustrate its clinical relevance, a post-hypnotic suggestion to quit smoking may be no more (or only slightly more) effective behaviorally than simply telling a person to stop, but it should lead the individual to experience their attempts to stop smoking as less effortful and the consequences as more manageable. This change in experience should feed back into control of the behavior, further reinforcing the success of the suggestion.

According to the discrepancy-attribution theory, it would also make sense for clinicians to consider the natural or most salient attribution that a client might make for each suggestion, since local contextual factors will determine the person's experience (Barnier and Mitchell, 2005). That is, if an experience of involuntariness would have greater clinical utility than an experience of reality, the clinician can select the response to suggest and manipulate the context to direct the client's attributions about their responding. The clinician might also consider whether their client has the ability, the developmental experiences, necessary to engender specific expectancies (which will generate discrepancies in hypnosis) for the most clinically useful hypnotic experiences.

According to cold control theory, individuals can acquire control and a sense of control in different ways, mixing hot and cold control to suit their tastes, abilities and circumstances (which

we might label the ‘bath model of clinical hypnosis’). For instance, a common clinical practice when helping a client to manage pain is to ask the person to control the color of an image in order to control the pain (‘as the image turns blue the pain will fade’). As a result of this suggestion, an unconscious executive intention may be formed to link the color change to pain change. So in this case, the person controls the pain, but without a conscious intention of doing so. They have a HOT of intending to control the color, but no HOT of intending to control the pain; the pain seems to go of its own accord as the person is aware of deliberately changing the color. In other words, the pain is managed via a combination of hot and cold control. To the extent that hypnosis involves and assists cold control, clinicians could usefully ‘piggyback’ clinically useful, but more (subjectively) difficult, experiences (such as reducing pain) with more mundane, intentionally experienced actions (such as manipulating an image).

6.7. Conclusions: a transformational advance?

Our cold control and discrepancy-attribution theories of hypnosis offer two new perspectives on how hypnosis happens. Hypnosis is fascinating, not because it creates entirely novel responses or creates responses in entirely novel ways, but because it influences the relationship between (as well as the feedback between) the control and monitoring of responding in compelling ways. It is neither uninteresting nor especially telling that we can achieve results similar to hypnotic suggestion via nonhypnotic means. Focusing on this fact alone misses the bigger picture that hypnosis generates responding that, although perhaps similar in many ways to nonhypnotic responding, feels surprisingly involuntary and/or surprisingly real. We need theories that seek explanations for the complicated and evolving relationship between what hypnotized people do and how they feel across the entire time course of a hypnotic session and hypnotic items.

In his chapter on the generations and landscapes of hypnosis, McConkey wrote that:

we need to move away from doing more of the same in terms of research, and we must try to do

some things differently. We need transformational as well as incremental advances in knowledge (Chapter 3, this volume, p. 74).

Our two accounts offer distinct and novel ways to think about hypnosis. These accounts forge new links with areas of current theorizing, methods and programs of research, predictions and people from outside the field of hypnosis. They reflect collaborations between a cognitive scientist interested in learning and conscious states (and a former graduate student of McConkey, Dienes) and a developmental psychologist interested in metarepresentational states (Perner); and between a cognitive psychologist interested in hypnosis and memory (and a fourth-generation Australian hypnosis researcher; Barnier) and a cognitive psychologist trained in animal learning and interested in learning, memory and attention (Mitchell). These collaborations are in the spirit of McConkey’s view that:

we need to be more adventurous and collaborative in our hypnosis research for the sake of the relevant disciplines and professions as a whole. We need to reach outside the field for inspiration and perspiration (Chapter 3, this volume, p. 74).

Just as links outside the field served earlier generations of hypnosis theorists in the development of their accounts, we believe that these collaborations will serve us in the development and refining of our accounts.

Our cold control and discrepancy-attribution theories are by no means complete or final; they are very much works in progress as our hypnosis, and nonhypnosis, research programs continue (e.g., Barnier, 2002a; Barnier *et al.*, 2004a,b, 2007; Mitchell, 2004; Mitchell *et al.*, 2005, 2007; Woody *et al.*, 2005; Dienes, 2007; Dienes and Perner, 2007; Perner and Dienes, 2008). Musing on one of these accounts, Woody wrote that ‘the perspective advanced is likely to be generative, even if it turns out not to be correct in some important respects’ (Woody, personal communication). In explicitly connecting hypnosis to the most current work on conscious states, behavioral control and memory illusions, our accounts offer novel directions for intrinsic hypnosis (not to mention, in time, instrumental and applied hypnosis), which may reveal hypnosis, hypnotic phenomena and

hypnotic responding in an entirely new light. So even if our accounts turn out not to be correct, they should at least stimulate a wave of new research and transform the field of hypnosis in initially modest, but important, ways.

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CHAPTER 7

Intelligent design or designed intelligence? Hypnotizability as neurobiological adaptation

David Spiegel

7.1. Introduction

Hypnotizability can be seen as an adaptive form of experiential flexibility, facilitating control over attention and perception, for instance in pain, imagination and somatic processes. Hypnotic response can be understood as a form of stress management, allowing for dissociation from immediate and overwhelming trauma and stress. It can also allow for intense absorption in both inner reverie and the environment, as well as rewarding engagement in tasks analogous to 'flow' experiences (Csikszentmihalyi, 1991). In this chapter, I argue that the high prevalence of hypnotizability in childhood is an adaptive method of learning and relating to others during pre-adolescent development.

Recent neurobiological research has demonstrated genetic evidence for hypnotizability as a trait, involving the dopamine pathway. Brain imaging has proven that hypnotic alteration of

perception is associated with congruent alterations in the function of the cognate sensory cortex, and that differences in the wording of instructions affect different brain regions. The anterior attentional system, including the anterior cingulate gyrus, is involved in hypnotic neural activity. Also, recent data demonstrate a 'default mode' network of activation during self-referential rest, which is inhibited during cognitive and perceptual tasks. It involves activity in the ventral portion of the anterior cingulate gyrus and the posterior cingulate cortex. The ability to inhibit this default mode network may also be a neural component of hypnotic performance. These data linking hypnosis to modern genetic and neuroimaging methods make it clear that hypnosis is not some arcane idiosyncratic phenomenon, but rather a window into aspects of brain function that have important implications for learning, development, stress response and neural control over somatic processes.

7.2. History of neural theories of hypnosis

The great historian of the unconscious, Ellenberger, credits hypnosis with providing the first Western conception of psychotherapy, a talking interaction between doctor and patient that could lead to the patient's benefit (Ellenberger, 1965). However, the first biological theory about hypnosis, magnetism, provided fuel for the wholesale dismissal of the phenomenon by the French Commission headed by Benjamin Franklin. The Report makes for very interesting reading, because it specifically dismissed Mesmer's theory of magnetic influence, but not the interpersonal power of the imagination. It was a carefully worded and thoughtful analysis of Mesmer's rationale and methods. Mesmer's problem, from their cogent point of view, was that he posited real rather than symbolic magnetic fields of influence. In the ensuing two plus centuries, we have gone from animal magnetism to magnetic resonance imaging, from symbolic influence at a distance to transcranial magnetic stimulation. Indeed, modern neuroimaging provides us with an important opportunity to construct a science of the imagination. Functional neuroimaging shows us not just what portions of the brain are activated during certain kinds of mental activity, but also how the brain as a whole regulates itself and the body.

Despite Mesmer's defeat at the hands of the Commission, the phenomenon simply would not disappear. Braid concurred with the rejection of magnetic theory, emphasized the role of suggestion and coined the term 'hypnotism' (Braid, 1843). Esdaile (1846) demonstrated remarkable surgical anesthesia effects of hypnosis performing amputations in India. His clinical accomplishment was greeted with a combination of skepticism and hostility. It has taken more than a century to rediscover that the brain can modulate pain functioning as an intact unit, rather than through pharmacological or other peripheral means (McGlashan *et al.*, 1969; Hilgard and Hilgard, 1975; Spiegel and Bloom, 1983; Spiegel *et al.*, 1989; Chaves, 1994; Holroyd, 1996).

Emile Coue studied with Liebault, and returned to America interested in the power of

the imagination. This was quite consistent with the positive statements about the role of suggestion in the Commission report. Indeed, it is striking that most post-mesmeric hypnotists acted as though they had read and accepted the conclusions of the report, and distanced themselves from the idea of an actual magnetic fluid that flowed between hypnotist and subject (Sinnott, 1892). Braid emphasized suggestion, Coue that plus imagination. Coue is famous for his self-administered mantra: 'Every day and in every way I get better and better' (Coue, 1923). He taught that imagination transcends the will, and one could certainly argue that the cognitive-behavioral psychotherapy of depression (Beck *et al.*, 1979; Beck, 1995) is very much related to Coue's idea that imagination drives will and mood. Bernheim (1889, reprinted, 1964), at the famous French school at Nancy, also emphasized the role of suggestion in hypnosis and further contributed to the view that hypnosis was a sign of normal rather than pathological mental function. This depathologizing of hypnotic capacity was an important contribution to the idea that hypnosis has something to teach us about normal brain function (Raz and Shapiro, 2002).

This normalization of hypnosis was important for its acceptance both by the public and by the medical profession, especially given that the famous neurologist, Jean-Martin Charcot, utilized hypnosis as a demonstration of hysterical disorders (Charcot, 1890). Breuer and Freud (1893–95, reprinted 1995) began their exploration of the unconscious with hypnosis, learned by Freud as a student of Charcot's. They introduced the important idea that hypnotic ability might be a diathesis for the expression of neurotic conflict, rather than a cause *per se* or evidence of such conflicts. This stress-diathesis model of hypnosis in the etiology of trauma-related symptoms continues to attract attention and empirical support (Butler *et al.*, 1996).

The next major step in the scientific growth of hypnosis was the development of hypnotizability scales (Hilgard, 1965; Spiegel and Spiegel, 1978). This provided systematic measures of the trait of hypnotizability which further demystified the phenomenon. Entry into a hypnotic state could now be understood as expression of a trait or latent ability, rather than a response anyone would be capable of largely defined by

the charisma and skill of the hypnotist. This also allowed for the construction of bridges to personality attributes such as absorption, a tendency for self-altering experience (Tellegen and Atkinson, 1974; Tellegen, 1981). While the associations between hypnotizability and absorption were modest, they provided evidence that those with the trait are more likely to employ it in everyday life, meaning that a formal hypnotic induction is not necessary to elicit hypnotic phenomena (Spiegel and Spiegel, 2004; for more on hypnotizability measures, see Woody and Barnier, Chapter 10, this volume; for more on correlates of hypnotizability, including absorption, see Laurence *et al.*, Chapter 9, this volume).

As is well described in Kihlstrom's chapter (Chapter 2, this volume), Ernest Hilgard (1965, 1986) advanced the connection between hypnosis and the then nascent field of cognitive psychology through his neodissociation theory. Building on the work of Janet (1889, 1907, 1920), he linked hypnosis to a fundamental structure of brain function that featured amnesia, a separation of mental elements that had not been integrated, rather than through Freud's (1914, 1961) repression theory with its postulated motivated forgetting. Hilgard's work anticipated McClelland and Rumelhart's (1986) parallel distributed processing model (see also Kruschke, 1992). In this bottom-up computational model of neural networks, integration of information becomes a problem rather than a given. Systems processing the coincident firing of millions of neurons at a time must extract coherence from all this activity, so it is not surprising that this is not always achieved. Such neural nets at times become 'stuck' in local minima, unable to proceed farther with processing unless some new 'activation energy' is introduced (McClelland and Rumelhart, 1986). This has been used as a mathematical model for dissociative phenomena in hypnosis (Li and Spiegel, 1992). The importance of trait and cognitive models will be explored next, as a prelude to discussion of the development of brain imaging and genetic research in hypnosis.

7.3. Nature of hypnosis

Hypnosis is a state of highly focused attention coupled with a suspension of peripheral awareness (Spiegel and Spiegel, 2004). This ability to

attend intensely while reducing awareness of context cannot only make hypnotic experiences intense, but also allows one to alter their meaning by changing the associational network linking perception and cognition. Hypnosis primarily involves a narrowing of the focus of attention (Spiegel, 1998a), analogous to looking through a telephoto lens rather than a wide-angle lens. In addition, hypnosis involves a suspension of critical judgment, which leads to decreased emphasis on evaluation of accuracy. Importantly, hypnotic experience alters context as much as content, the network of associations to perception (its meaning) as well as the perception itself, analogous to the alteration of suffering as well as sensation in analgesia.

7.3.1. Hypnotizability: trait versus social state

This definition differs in emphasis from Kihlstrom's reasonable description of the state versus socio-cognitive view of hypnosis (see Kihlstrom, Chapter 2, this volume). Kihlstrom notes that 'all hypnosis is self-hypnosis' (p. 24) and argues cogently that the existence of the state is a necessary prerequisite for the effect of the social influence emphasized by socio-cognitive theorists (Sarbin and Coe, 1972; Kirsch, 1991, 1999; Kirsch and Lynn, 1998; see also Lynn *et al.*, Chapter 5, this volume). Kihlstrom and also Barabasz and Barabasz (Chapter 13, this volume) point out correctly that the social dimension of hypnotic phenomena is often put forward as an *alternative* explanation rather than a *component* of hypnotic experience. I can still remember quite vividly a debate in Boston in the early 1970s between Ted Sarbin and the usually taciturn Jack Hilgard. Sarbin was proposing that hypnotic experience was nothing more than a form of response to social influence. Hilgard, with considerable heat (and light), pointed out that experiments done among sizeable groups of students will by design wash out differences in hypnotizability, and pointed out that the social influence theory simply cannot account for trait differences in hypnotizability, which account for variance in response to social influence. Sarbin smiled but had no cogent response to this rather intense form of scientific social influence.

The socio-cognitive critique has always been framed, for reasons that are not clear to me, in extremist terms that involve the claim that social influence completely accounts for everything that happens in hypnosis (e.g. Radtke and Spanos, 1981). Instead of this ‘winner take all’ approach, the only scientifically tenable question is: ‘what proportion of the variance can be accounted for by sociocognitive factors?’ Other variables, including trait hypnotizability and self-management of hypnosis, are always co-conspirators in the production of hypnotic phenomena. Oakley (Chapter 14, this volume) usefully describes how the fact that hypnotic phenomena may occur without a formal hypnotic induction does not contradict evidence that a measurable change in mental state and brain function can occur after formal hypnosis has been induced.

7.3.2. Developmental aspects of hypnotizability

It is well known that hypnotizability is substantially higher among children than adults, and that it gradually tapers in a stable adult level throughout adolescence (Hilgard, 1970; Morgan and Hilgard, 1972). There may be adaptive developmental advantage in an ability to focus attention in childhood. This is a time in life when parents provide peripheral awareness and use their critical judgment to protect the child from harm. The child is therefore freer to perceive and think intensely. Childhood is a period of life when the imagination runs free, and learning is fun. Indeed, in our eagerness to prepare children for a competitive and intellectually challenging world, we are imposing an overscheduled life on children, depriving them of much of their natural pleasure in learning (Rosenfeld and Wise, 2001). Furthermore, their growth and survival depend on attending to and learning from their parents and other caretakers intently. In fact, the Commission that critically examined the work of Mesmer over two centuries ago noted that the ability of one human to influence another must not only have therapeutic potential, but must characterize the ability of parents to raise children, thereby identifying a similarity between hypnotic and other forms of social influence (Darnton, 1968; Spiegel, 2002).

Thus the hypnotic-like mode of consciousness favors imaginative involvement (Hilgard, 1970) and absorption (Tellegen and Atkinson, 1974; Tellegen, 1981), which are well-suited to childhood.

J. R. Hilgard observed that children with a history of imaginative involvement with parents tend to retain their hypnotizability into late adolescence, although she also noted that later high hypnotizability was also correlated with a history of physical punishment. In that case, she speculated that hypnotic imagination might serve as a useful escape from a harsh and unpleasant reality. Tellegen and colleagues found a modest but significant correlation between hypnotizability and a tendency for ‘self-altering experiences’, or absorption. Tellegen had been puzzled by the lack of correlation between the stable trait of hypnotizability and other major personality dimensions. But he found that a tendency to become fully absorbed in a movie or a sunset was correlated with hypnotizability. Indeed, this work shows that those who have the trait tend to utilize it spontaneously in everyday life to produce states of reverie and self-altering perception and imagination (for more on hypnotizability and absorption, see Laurence *et al.*, Chapter 9; Oakley, Chapter 14, this volume).

7.3.3. Correlates of hypnotizability

Specific characteristics of the highly hypnotizable individual include the following:

1. *Being trusting of others.* Highly hypnotizable individuals have been shown to be evaluated by others as finding it easy to trust (Roberts and Tellegen, 1973). While this ability to suspend critical judgment and incorporate suggestions, instructions or direction from others could be seen as a vulnerability (H. Spiegel, 1974), it also represents an aptitude for sociability, for co-operation in social relationships, that has adaptive value for a species that is thoroughly social.
2. *Intense imagination.* Highly hypnotizable individuals are known for imaginative involvements (Hilgard, 1970), a proneness to engage in vivid and seemingly real imaginative experiences. Hypnosis has also been referred to as ‘effortless experiencing’ (Bowers, 1983, originally published 1976), in which the

intensity of imagination is accompanied by a lack of metaconsciousness, or awareness of being engaged in attention and imagination (Spiegel, 1990). This type of mental experience has the potential to enhance creative opportunities (Zamore and Barrett, 1989; Gawler, 1998; Moene and Joogduin, 1999; Barber, 2000).

3. *Living in the present.* Highly hypnotizable individuals tend to live in the present, rather than worrying about past and future (Spiegel and Spiegel, 2004). This capacity to dissociate past and future concerns in the service of focus in the present is a highly valued goal of Eastern Buddhist meditative techniques (Kabat-Zinn *et al.*, 1985, 1992, 1998; Kabat-Zinn, 1994). This is seen in Eastern tradition as producing equanimity, an ability to absorb and put into perspective the stressors of everyday life.

Thus, highly hypnotizable individuals are sociable, imaginative and tend to live in the moment. This does not mean that they are devoid of problems, ranging from pathological compliance with others (H. Spiegel, 1974) to a vulnerability to post-traumatic stress disorder (PTSD; Stutman and Bliss, 1985; Spiegel *et al.*, 1988). However, there is clear advantage to having a portion of the species that is capable of easily seeking and forming intense interpersonal relatedness, being imaginative, able to handle stress (at least in the short term), and able to regulate psychological and somatic responses to stress.

7.3.4. Stability of hypnotizability

This understanding of hypnosis emphasizes the importance of trait distinctions in hypnotizability (Hilgard, 1965; Spiegel and Spiegel, 2004) and the relative ease and speed of inducing hypnosis among those who are sufficiently hypnotizable. There is indeed compelling evidence of the stability of trait hypnotizability during adulthood. In one study, the test–retest correlation of hypnotizability measured at a 25-year interval was 0.7, which is higher than the stability of IQ over a similar period of time (Piccione *et al.*, 1989). Thus, when individuals are highly hypnotizable, this ability infuses many aspects of their life, ranging from a tendency toward absorption defined as total engagement

in self-altering experiences (Tellegen and Atkinson, 1974; Tellegen, 1981), to having hypnotic-like interactions with others associated with their tendency to trust others irrationally (Roberts *et al.*, 1973), or experience interactions with others as occasions for uncritical response to inadvertent suggestions (H. Spiegel, 1974).

7.4. Hypnosis: evolution or intelligent design?

The fact that hypnotizability is such a widely distributed trait, and that entry and exit from the hypnotic state occur easily and spontaneously, makes one wonder why this ability should be a common but not uniform component of human consciousness and cognition. There is recent evidence that hypnotizability is associated with heterozygosity (methionine/valine) of the catechol-*O*-methyl transferase gene (Lichtenberg *et al.*, 2004; Raz, 2005). This is the same gene that has been associated with schizophrenia (Matsumoto *et al.*, 2003; Weickert *et al.*, 2004; Weinberger, 2005), but in that case the genetic risk on chromosome 22q involves valine/valine homozygosity. The heterozygous form may allow for greater frontal lobe dopamine-mediated flexibility in figure/ground attention, representing enhanced attentional control. Interestingly, hypnotizability is generally quite low among people with schizophrenia (Lavoie and Sabourin, 1973; Spiegel *et al.*, 1982; Pettinati *et al.*, 1990; Frischholz *et al.*, 1992), who lack the ability to control attentional processes and maintain awareness of information at different levels of abstraction (Shakow, 1974; Spiegel and Spiegel, 2004). While Oakley (Chapter 14, this volume) notes that activation of the anterior cingulate cortex (ACC) has been observed during auditory hallucinations in both normal high hypnotizables and schizophrenic patients, he also adds that hypnotic induction of hallucination is unlikely to be a suitable model for the exploration of hallucinations in schizophrenia. Indeed there is quite a difference between inducing and observing even an apparently similar symptom. ACC activation could be a mechanism of symptom production among high hypnotizables and a response to hallucination among those with schizophrenia.

So why would the ability to focus attention so tightly and alter perception so profoundly be evolutionarily conserved? It would seem to be more than some ‘intelligent design’, but rather a design of intelligence that confers survival advantage. *Homo sapiens* are not a particularly splendid example of the best in the animal kingdom. Other animals are stronger, faster, smell, see and hear better than we do. Our major adaptive advantages are the opposing thumb (good for building tools, shaking hands and using computer keyboards) and our large brains (good for planning, anticipating, avoiding danger and, most importantly, forming and maintaining social relationships). Collectively we have come to dominate and despoil the planet, but as individuals we would be more often prey than predator. Predators operate primarily through motion detection, so the ability to inhibit activity, even in the face of overwhelming fear or pain, may well have adaptive advantage. When being hunted or attacked by a predator, the ability to immobilize oneself or even feign death may enhance the chances of survival. Also, the ability to focus on critical tasks involving planning, searching for food and protecting family while avoiding distractions also has survival advantage. Thus, individuals with considerable hypnotic capacity may well have had adaptive advantages that allowed them to procreate successfully and pass on their genes. From this perspective, hypnotizability is not some arcane phenomenon elicited only under unusual circumstances (Mesmer’s packets, dangling watches or circling spirals), but rather represents a commonly employed alteration in consciousness.

Indeed, in some societies, the ability to engage in trance-like phenomena is a source of heightened social status. In Bali, for example, those who are capable of trance dancing, which includes moving while holding a sword pointed at one’s throat and dancing barefoot through hot coals, are considered special individuals (Belo, 1960; Suryani and Jensen, 1993). In a culture with a rigid hierarchy, the only means of upward mobility from the lowest caste to the intermediate priest caste is via skill in trance dancing. Also, the ability to enter trance states is requisite to perform the functions of healer in many Eastern cultures (Suryani and Jensen, 1992;

Stephen and Suryani, 2000). We have evidence that those in such cultures who choose Eastern healers over Western allopathic medicine for their treatment are more hypnotizable, and those who benefit the most and seek repeat treatments are even more highly hypnotizable (Biswas *et al.*, 2000). Thus, alterations in consciousness typical of highly hypnotizable individuals that include evidence of altered mental states with drugs and relative insensitivity to pain confer in some cultures social as well as survival advantages.

7.5. Neurobiology of hypnotizability

This understanding of the hypnotic state, emphasizing focused attention and concentration, points toward a neurobiology related to the anterior attentional system, especially the anterior cingulate gyrus and portions of the frontal lobes (Posner and Petersen, 1990; Raz *et al.*, 2002). The dopamine system is richly distributed through these regions. In one study, we found that hypnotizability measured using the Hypnotic Induction Profile (Spiegel and Spiegel, 2004) was robustly correlated with levels of homovanillic acid, a dopamine metabolite, in the cerebrospinal fluid (Spiegel and King, 1992). The other major brain sites of interest involve sensory cortices affected by hypnotic perceptual alteration tasks, for example visual (Spiegel *et al.*, 1985; Kosslyn *et al.*, 2000), somatosensory (Spiegel *et al.*, 1989; Rainville *et al.*, 1997, 2002), auditory (Nash *et al.*, 1987; Barabasz *et al.*, 1999) and olfactory (Barabasz and Lonsdale, 1983). There is considerable evidence that hypnotic alteration of perception produces appropriate changes in brain electrical activity and blood flow in the salient sensory cortices.

7.5.1. Hot research issues in the neurobiology of hypnosis and hypnotizability

There are a number of promising leads regarding brain mechanisms underlying hypnotic attention and perceptual alteration. The ability to concentrate hypnotically must have been conserved

throughout evolution for a reason. It would seem that precise control over perception and motor function might serve to protect from a maladaptive response to acute trauma, and help in recuperation from injury as well as chronic illness, especially in prehistory when nothing like modern medical care was available. It has by now been well established that hypnotic alteration of perception is accompanied by measurable changes in brain electrical activity and blood flow (for a review, see Barabasz and Barabasz, Chapter 13, this volume). A major issue in the field now is the extent to which hypnotic perceptual alteration in general and hypnotic analgesia in particular can be accounted for by attentional shifts versus changes in primary perceptual processing (De Pascalis, 1999). De Pascalis suggested that both are involved, but places primary emphasis on redeployment of attention. Thus one critical question now is the neuroanatomical location of the crucial changes: do they involve alterations in the primary sensory association cortices, in elements of the attentional system, or in both?

7.5.1.1. Specific hypnotic perceptual alteration instructions and neural response

One of the most compelling recent findings to address this question involves the work of Pierre Rainville and colleagues at the University of Montreal. In a series of studies of hypnotic analgesia utilizing positron emission tomography (PET), they demonstrated that by simply changing the words used to induce hypnotic analgesia for experimentally induced pain, they could affect blood flow in different brain regions. A hypnotic instruction for decreased pain perception produced analgesia associated with reduced blood flow in somatosensory cortex, while an instruction that the pain would be there but would not bother the subject as much produced analgesia associated with reduced activity in the anterior cingulate gyrus (Rainville, 1997, 1999, 2001, 2002) (Figure 7.1).

These findings are intriguing because they illustrate not only brain activity alterations concomitant with hypnotically induced analgesia, but also that the words used to induce the

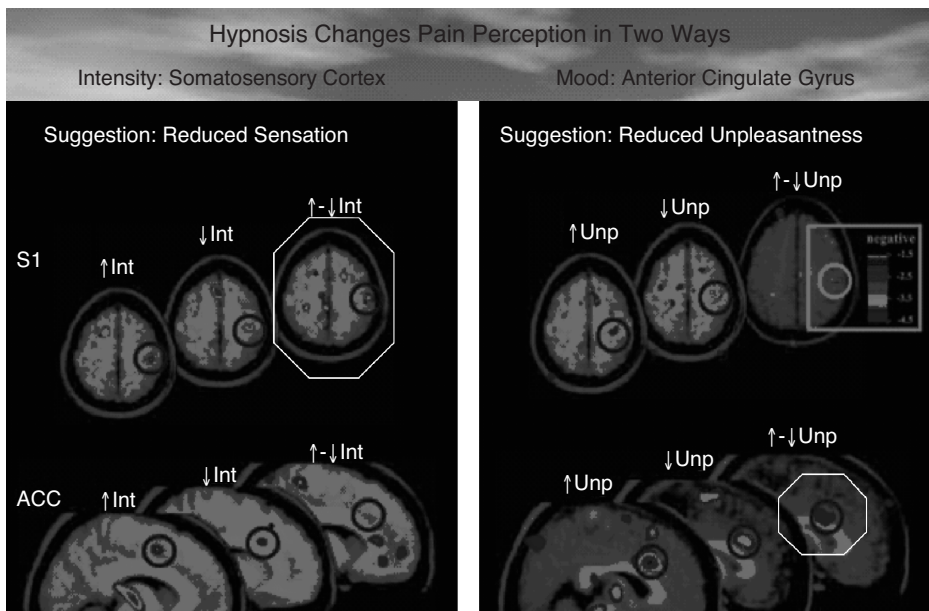


Fig. 7.1 Site of brain activity associated with hypnotic analgesia depends on the nature of the perceptual alteration. Reduced perception of pain produces reduced activity in somatosensory cortex; reduced concern about the pain is associated with less activation of the anterior cingulate gyrus. From 'Pain affect encoded in human anterior cingulate but not somatosensory cortex', by P. Rainville *et al.* (1997), *Science*, 277: 968–971. Reprinted with permission from AAAS. See Plate 1.

analgesia activate different pathways for pain reduction affecting either the sensory or affective dimensions of pain. The anterior cingulate is involved in focused attention, but also mediates output from the limbic system, which is the pathway involved in pain-related anxiety and depression.

Recent work by De Pascalis (De Pascalis *et al.*, 1999) confirms the importance of the type of hypnotic analgesia instruction. They found that focused analgesia in particular, but also dissociative imagery, produced more event-related potential (ERP) changes, primarily P300 reduction, than did simple relaxation, and they also observed higher fronto-temporal N200 and smaller posterior parietal P300 during hypnotic analgesia among high hypnotizables.

Earlier studies involved the relationship between perceptual alteration in hypnosis and ERP amplitude. ERP studies provide good temporal but relatively poor spatial resolution, and therefore contribute less to anatomical localization. The fundamental hypothesis is that if a hypnotized person reduces perception of the stimulus, there should be corresponding changes in the amplitude of the ERP to that stimulus. Half of some 20 early studies did demonstrate such an effect, although the rest did not. Problems with this early work included small sample sizes, the use of patient rather than normal populations, often with psychiatric or neurological disease, and semi-quantitative analysis of ERP amplitude.

Recent studies have indeed shown that there are ERP amplitude changes consistent with the content of hypnotic perceptual alterations, generally seen over the cognate sensory association cortex. Examples include hypnotic modulation of ERPs to visual (Spiegel, 1985; Spiegel and Barabasz, 1988; Jasiukaitis *et al.*, 1996; De Pascalis and Carboni, 1997), olfactory (Barabasz and Lonsdale, 1983) and somatosensory (Spiegel *et al.*, 1989; De Pascalis *et al.*, 1999, 2001) perceptual stimuli.

In our laboratory, we found that highly hypnotizable normal individuals produced significant amplitude reductions in the P100 and P300 components of the visual ERP in response to a hypnotic suggestion of an obstructive hallucination blocking view of the stimulus generator (Spiegel *et al.*, 1985). The P100 alterations were

especially surprising, since this early component of the evoked response is thought to be primarily affected by stimulus intensity, rather than by reaction to the stimulus. We also found P300 reduction to somatosensory stimulation after a suggestion of hypnotic numbness (Spiegel *et al.*, 1989). In a later study, we compared the effects of visual obstructive hallucination with the simple instruction to attend to the contralateral visual field (Hillyard and Munte, 1984) in highly hypnotizable subjects. The directed inattention outside of formal induction reduced P100 in a manner similar to hypnotic obstruction (Jasiukaitis *et al.*, 1996). Thus, for this early component there does not seem to be any special process different from inattention operating during obstructive hallucination, similar to the findings of De Pascalis *et al.* (2004). However, for the P200 and P300 components of the waveform, directed inattention increased amplitude while hypnotic obstruction decreased it, especially over the occipital cortex, while the difference between simple visual field attention and inattention was primarily mid-frontal. The increased positive amplitude for these components in the frontal region during inattention reflects the absence of an underlying slow negativity, called processing negativity, which appears when particular sensory input features are selectively attended to. The reduced amplitude in the occipital cortex is consistent with a specific effect of hypnosis during obstructive visual illusion—the subject shows brain evidence of reduced perception consistent with the hypnotic illusion.

Barabasz (see Barabasz and Barabasz, Chapter 13, this volume for a related discussion) initially observed the opposite of what we had found: that an obstructive hypnotic hallucination actually increased P300 amplitude (Barabasz and Lonsdale, 1983). This was puzzling in light of our finding that hypnotic visual obstruction reduced P300 amplitude (Spiegel *et al.*, 1985), a finding that has been confirmed by De Pascalis and Carboni (1997). Barabasz had utilized the anosmia to ammonia instruction of the Stanford Hypnotic Susceptibility Scale, which is worded: ‘You can no longer smell anything at all’ (Hilgard, 1965). Subjects who may have reduced their perception but not eliminated it completely might well have been surprised by the

odor, and surprise increases P300 amplitude (Baribeau-Braun *et al.*, 1983). Barabasz accepted this interpretation (Spiegel and Barabasz, 1988), and went on to demonstrate in an elegantly designed experiment that an obstructive hallucination results in reduced ERP amplitude, while a negative hallucination results in increased amplitude (Barabasz *et al.*, 1999; Jensen *et al.*, 2001).

The observation of different brain findings based on the mere wording of hypnotic instructions is consistent with our discussion above of Rainville's findings in regard to hypnotic analgesia. In this case, the crucial difference in the two instructions was the hardness of the paradigm in the case of obstructive hallucination, and the need to break with the paradigm if it did not work completely in the case of negative hallucination. An obstruction to perception need not be complete or perfect. One might well expect to see light through a curtain or box—this does not challenge the vividness or effectiveness of the instructed visual illusion. Thus any degree of perceptual alteration still allows subjects to stay with the instructed paradigm—to focus on it rather than evaluate it or have to process competing input. These studies underscore the importance of the specific wording and nature of hypnotic instructions when studying their neurophysiological concomitants. A word here or there in hypnosis means brain activation here or there.

PET and functional magnetic resonance imaging (fMRI) both provide measures of brain function with far greater anatomical precision than that obtainable using electrophysiological techniques. Kosslyn and colleagues (Kosslyn *et al.*, 2000) found that hypnotically induced illusions affecting color vision resulted in bi-directional blood flow changes in the color processing cortex (see Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume, for further discussion of the implications of this study). Eight highly hypnotizable subjects were asked to see a colored pattern in color, a similar gray-scale pattern in color, the color pattern as gray scale and the gray-scale pattern as gray-scale during PET scanning using $^{15}\text{O}\text{-CO}_2$ (Figure 7.2). The classic 'color area' in the fusiform/lingual region was identified by analyzing the results when subjects were asked simply to perceive color as color

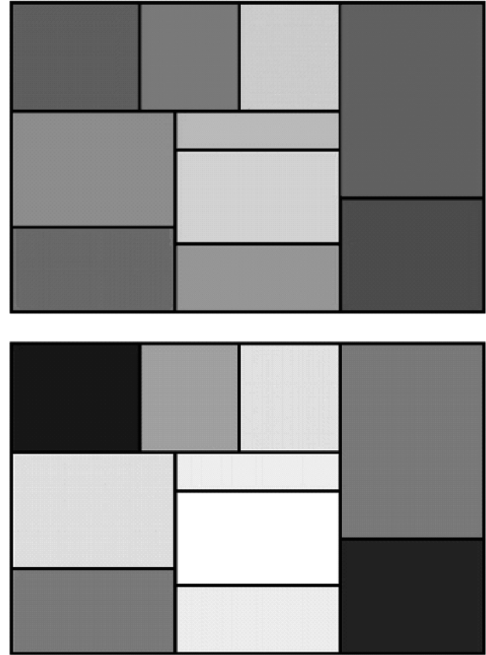


Fig. 7.2 Visual contrasts utilized for identifying color processing regions in the brain and as the basis for instructed hypnotic visual alteration in color processing. From 'Hypnotic visual illusion alters color processing in the brain', by S. M. Kosslyn *et al.* (2000), *American Journal of Psychiatry*, 157: 1279–1284. Reprinted with permission from the *American Journal of Psychiatry* (Copyright, 2000), American Psychiatric Association. See Plate 2.

versus when they were asked to perceive gray as gray (Figure 7.3). When subjects were hypnotized, both the left and right hemisphere color areas were activated when they were asked to perceive color, whether they were actually shown the color or the gray-scale stimulus. These brain regions showed decreased activation when the subjects were told to see gray scale, whether they were actually shown the color or gray scale stimulus (Figure 7.4). These results were obtained only during formal hypnosis in the left hemisphere color region, whereas blood flow changes reflected instructions to perceive color versus gray in the right hemisphere whether or not subjects had been formally hypnotized. The observed changes in subjective experience induced during a hypnotic state were reflected

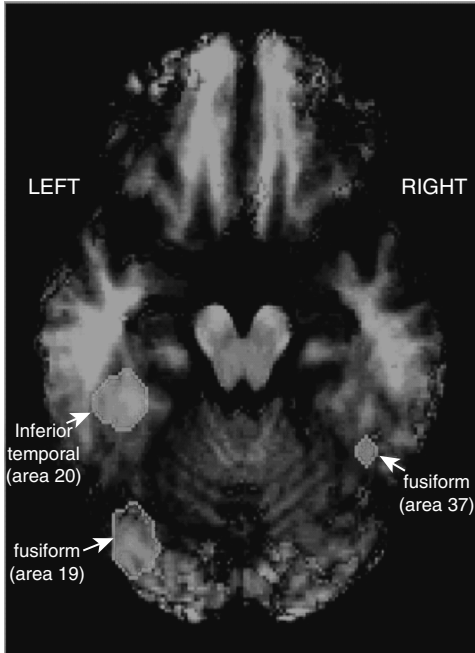


Fig. 7.3 Identification of color processing regions using PET. From ‘Hypnotic visual illusion alters color processing in the brain’, by S. M. Kosslyn *et al.* (2000), *American Journal of Psychiatry*, 157: 1279–1284. Reprinted with permission from the *American Journal of Psychiatry* (Copyright, 2000), American Psychiatric Association. See Plate 3.

by changes in brain function similar to those that occur in perception—in this case believing is seeing.

In this PET study of effects of hypnosis on color vision processing (Kosslyn *et al.*, 2000), blood flow was altered consistent with hypnotic visual illusions of the presence or absence of color in both the left and the right lingual gyri. However, the difference on the left occurred only when the subjects (all highly hypnotizable) were formally hypnotized, not merely when they were instructed out of hypnosis to see the difference in color. In the right hemisphere, blood flow changed in response to instruction in or out of formal hypnosis. This finding suggests that effects of the state of hypnosis *per se* activate the left hemisphere rather than the right, which in this study responded to nonspecific instruction.

7.5.1.2. Hypnotic changes in attention systems

There is also evidence that hypnosis involves mechanisms related to arousal and attention, but is not simply the product of them. Activity in the frontal lobes and the anterior attentional system, especially the cingulate gyrus, seem to be involved. Posner and colleagues (Posner and Petersen, 1990; Fan *et al.*, 2002) postulate three

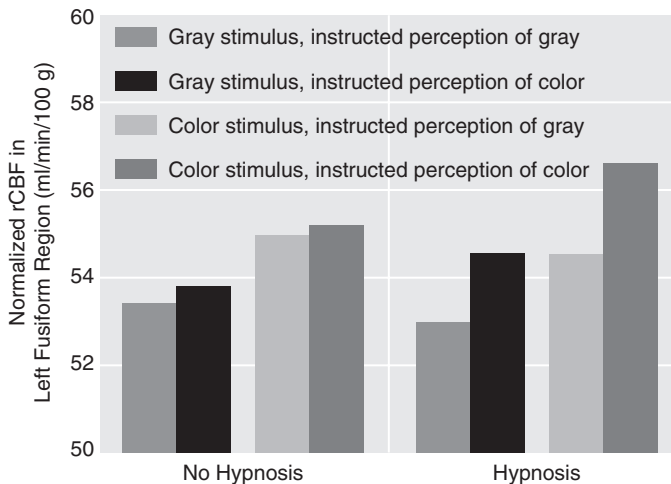


Fig. 7.4 Increases and decreases in blood flow during hypnosis congruent with instructed hypnotic perceptual alteration. From ‘Hypnotic visual illusion alters color processing in the brain’, by S. M. Kosslyn *et al.* (2000), *American Journal of Psychiatry*, 157: 1279–1284. Reprinted with permission from the *American Journal of Psychiatry* (Copyright, 2000), American Psychiatric Association.

components of attention: executive attention; alerting; and orienting. According to Posner, executive attention, modeled as target detection, is related to the anterior cingulate gyrus. Based on their work, this attentional subsystem is described with a ‘spotlight’ analogy, narrowing the focus of attention. The second component, alerting, is a feature of the anterior attention system and is characterized by rapid response with an increase in error rates. This component is tied to the right medial aspect of the frontal lobe. The third and most posterior is orienting, located in the anterior occipital/posterior parietal region. This area has strong connections from the superior colliculus and the thalamus. Lesions in these lower connections result in a difficulty in orienting, focusing attention on the target and avoiding distraction. Furthermore, there is a differential type of orienting, with right hemisphere bias toward global processing and the left toward local processing.

Hypnotic concentration seems most similar to phenomena associated with a relative activation of the anterior as opposed to the posterior attention system, in Posner’s terms, especially the executive attention function of the anterior cingulate gyrus. Barabasz and Barabasz (Chapter 13, this volume) note that entry into hypnotic states seems to involve deactivation of vigilance characteristic of posterior attentional systems. While anxiety and stress involve primary activation of limbic hypothalamic–pituitary pathways (Lopez *et al.*, 1999), the kind of hypervigilance involved in anxiety also involves activation of posterior visual (Buchsbaum, 2000) and auditory (Mueser and Butler, 1987) vigilance systems. Pribram distinguished activation from arousal (Pribram and McGuinness, 1975). His earlier conceptualization, quite consistent with Posner’s, links arousal (e.g. vigilance or hypervigilance) to noradrenergic activity and parsing, or activating multiple systems, with external perception orientation being primary. Activation, on the other hand, is largely dopaminergic, involves ‘chunking’, or reducing the number of parallel systems, and involves an inner rather than outer focus. Activation is more characteristic of the hypnotic state, one of alertness without arousal. We have evidence, in fact, that hypnotizability is correlated with homovanillic acid (HVA) levels in the cerebrospinal fluid (CSF; Spiegel and King, 1992).

HVA is a dopamine metabolite, providing evidence linking hypnosis to dopaminergic activity. Furthermore, the hypnotizability of schizophrenics, who have abnormalities in dopamine activity and the D2 receptor (Lidow and Goldman-Rakic, 1997), is generally lower and there is an absence of very high hypnotizability (Lavoie and Sabourin, 1973; Spiegel *et al.*, 1982; Lavoie and Elie, 1985; Pettinati *et al.*, 1990).

This association between hypnotic trance and activity in dopamine-rich regions of the brain receives further support from genetic evidence, noted above, that hypnotizability is associated with heterozygosity (methionine/valine) of the catechol-*O*-methyl transferase gene (Lichtenberg *et al.*, 2004; Raz, 2005). The heterozygous form may allow for greater frontal lobe dopamine-mediated flexibility in figure/ground attention, representing enhanced attentional control. Since the major portions of the brain that are dopamine-rich are the frontal cortex and the basal ganglia (Robbins, 1997; Taber and Fibiger, 1997; Weinberger *et al.*, 2001; Akil *et al.*, 2003), these genetic findings are consistent with the idea that hypnotic activity involves a back to front shift in the dominance of brain activity. Clearly this hypothesis is a vast oversimplification of immensely complex brain activity, and Raichle *et al.* (2001) have reminded us that our excitement about specific regions of brain activity in fMRI or PET studies represents at most 1–2 percent of what the brain is doing at any particular moment. Nonetheless, characterization of the function of particular brain regions that are otherwise known for focusing of attention, imagination and self-regulation in relation to hypnosis helps to make hypnotic phenomena and their relationship to other neural activity more scientifically comprehensible.

7.6. Hypnotic brain function

7.6.1. Responding to words and manipulating images

Hypnotic inductions frequently involve eye closure (although this is not necessary), which may well inhibit the posterior vigilance attentional center proximate to the occipital cortex. Pathways from the thalamus to this center are clearly defined. This might shift the attentional

balance anteriorly, with the consequence of narrowing the focus of attention and enhancing activation. Then mechanisms similar to those described in dreaming may occur (Hobson and Stickgold, 1995). Images are processed as though they had been received from outside, hence the vividness of hypnotic imagery and the phenomenon of hypnotic hallucination, which can result in reduction or increase of ERP amplitude. Indeed, hypnosis seems to involve an inversion of our usual means of processing words and images (Spiegel, 1998*b*). In general, we respond to images and manipulate words, whereas in hypnosis we respond to words and manipulate images. In a trance we accept verbal input relatively uncritically (suggestibility), but are capable of transforming images and perceptions. Much of the power of the hypnotic state involves the uncritical acceptance of the implausible; for example, being able to reduce or eliminate pain when the same unpleasant stimulus is there.

7.6.2. Inducing or reducing automaticity

The ‘searchlight’ or focused attention model of hypnosis receives support from recent data indicating that hypnosis can effectively decontextualize lexical perception and eliminate the delay in reaction time seen in the classical Stroop interference paradigm (Raz *et al.*, 2002, 2005, 2006). In these experiments, high hypnotizables were instructed that the words they would see were written in a foreign language and would have no meaning. This instruction eliminated the standard lexical processing delay in naming the color of a word that describes a different color. This finding is consistent with our own findings that hypnotic instruction to focus on just a portion of the letter reduces Stroop interference (Nordby *et al.*, 1999), and with even earlier work by Sheehan *et al.* (1988). The one contradictory finding (Dixon and Laurence, 1992) can be accounted for by differences in hypnotic instruction. This is crucial for interpreting studies of hypnotic effects, as we have seen earlier in studies of the EEG effects of hypnotic suggestion to change olfactory perception (Barabasz and Lonsdale, 1983). The bulk of these Stroop studies suggest that hypnosis can be employed to reduce the automaticity of lexical

processing. This may seem odd given that hypnotic performance is typically seen as *inducing* automaticity when in this case it *reduces* the automaticity associated with word reading. The key feature of hypnosis may involve altering automaticity rather than simply increasing it. It may modulate the sense of agency. In hypnosis, one takes experiences that would ordinarily be tied to a sense of agency, such as lifting one’s hand, and makes them seem automatic—the hand seems to rise by itself because the subject has been given the instruction that his hand will feel light and buoyant like a balloon (Spiegel and Spiegel, 2004). The subject exerts control over perceptual processing that is unusual—enhancing agency over perception—while the usual sense of agency over motor function is reduced, because the motor activity is driven by the perceptual alteration. Intentionality in the brain is largely driven by the frontal lobes, and typically the portion of the brain in front of the central gyrus is most associated with agency and action—predominantly motor activity and speech. The posterior portion of the cortex—postcentral gyrus, temporal and occipital lobes, is primarily receptive—processing somatic sensation, hearing and vision.

7.6.3. Default mode processing

There is recent evidence of what has been called ‘default mode’ activity in the brain, involving regions that include the ventral region of the anterior cingulate cortex (vACC) and the posterior cingulate cortex (PCC; Raichle *et al.*, 2001; Greicius *et al.*, 2003). This appears to be resting state activity that is decreased during cognitive processing and is inversely related to activity in lateral prefrontal regions. There is evidence that this default mode activity is also inhibited by sensory processing (Raichle *et al.*, 2001) and involves the hippocampus and therefore episodic memory (Greicius and Menon, 2004). The association between default mode activity and memory is further reinforced by the observation of decreased resting state functional connectivity in posterior ACC and hippocampus among people with Alzheimer’s disease (AD; Greicius *et al.*, 2004). However, inhibition of default mode activity during cognitive processing is stronger in healthy controls than in individuals with mild

cognitive impairment or AD (Rombouts *et al.*, 2005). Furthermore, there is evidence that this default mode activity specifically involves self-reference (Gusnard *et al.*, 2001). Thus, this literature would suggest that neurologically imposed loss of episodic memory in cognitive impairment and AD is associated with hypoactivity of default mode activity involving PCC and hippocampus, while healthy cognitive functioning involves the ability to inhibit PCC and hippocampal activity in the service of performing a sensory or cognitive task, to control rather than lose it.

The rather thoroughgoing loss of self-consciousness seen in hypnotic states, including age regression and even age ‘progression’, suggests an unusual ability to inhibit ordinary self-awareness (Spiegel and Spiegel, 2004). This leads to the hypothesis that one thing that may distinguish those with high hypnotizability is an exceptional ability to inhibit default mode activity during perceptual and cognitive processing. This could provide a neurological mechanism for dissociation as well, with its attendant alterations in episodic memory and sense of detachment from self, body and environment (e.g. dissociative identity disorder, dissociative amnesia and depersonalization disorder; Spiegel and Cardena, 1991; Maldonado and Spiegel, 1998; Maldonado and Spiegel, 2003). This suppression of the default mode network might help to account for hypnotic analgesia as well, in that patients with real clinical pain can become sufficiently absorbed in a sensory alteration task (cognitive tasks designed to alter perception) that they can inhibit awareness of their ordinary experience of the pain and its implications for their health status (Hilgard and Hilgard, 1975). Oakley (Chapter 14, this volume) also discusses the salience of the default mode network to hypnosis, suggesting that highly hypnotizable individuals may have a different kind of default mode.

This default mode analysis may also help to explain the apparent loss of agency and sense of automaticity in hypnosis. From this perspective, in hypnosis, there is greater potential to inhibit self-awareness (default mode activity) while exerting greater agency in rearranging perception and motor control. The default mode approach suggests that there is a trade-off between self-reflective and cognitive/perceptual activity, implying that those who can best inhibit default

mode activity may be more effective at cognitive and perceptual tasks. This is effectiveness without agency, perhaps through decreased vACC and PCC activity and increased activity of the medial as well as lateral frontal cortex. It could well be that highly hypnotizable individuals excel at default mode inhibition, and therefore show enhanced ability to alter sensory and motor function. At the same time they would experience less self-consciousness of their activities, and therefore have a sense of involuntariness. Better understanding of the neuroanatomical and functional activities of these portions of the brain among high hypnotizables and during hypnotic experience is an exciting opportunity for future research designed to elucidate brain function in general and hypnosis in particular. Oakley (Chapter 14, this volume) notes that the distinction between perceived voluntary (motor cortex) and hypnotically instructed as well as actual passive movement of a limb involved activation in parietal cortex and cerebellum.

7.6.4. Hypnotic attention versus vigilance

The observed difference in ERP amplitude response between obstructive (reduced amplitude) and negative (enhanced amplitude) hallucinations (Barabasz *et al.*, 1999; Jensen *et al.*, 2001) is quite consistent with a searchlight or focusing model involving the anterior attention system and the anterior cingulate gyrus, which is involved in conflict detection, in particular. Breaching of a negative hallucination instruction tends to trigger vigilance—something unexpected is happening that interrupts the prevailing cognitive paradigm, and would probably activate the posterior attentional system, producing autonomic arousal. Clinicians often structure hypnotic suggestions in ways that allow for varieties of responsiveness in both type and intensity (Spiegel and Spiegel, 1978; Crasilneck and Hall, 1985). From the point of view of clinical effectiveness, the crucial thing is that the hypnotic state and the task performed within it should reinforce rather than contradict one another. This helps to maintain the consistency of the hypnotic state, thereby facilitating circuit redundancy or ‘activation’, rather than requiring arousal and external scanning

awareness for a new means of interpreting perceptions (Pribram and McGuinness, 1975).

The role of the anterior attentional system in hypnotic analgesia is emphasized by Crawford *et al.* (1993). Using ^{133}Xe regional cerebral blood flow (CBF) imaging, hypnotic analgesia to ischemic pain was studied using high and low hypnotizable groups. They found bilateral CBF increases in the orbitofrontal cortices of the high hypnotizable group during hypnotic analgesia. They also found changes in the somatosensory cortex. Ischemic pain produced CBF increases in the somatosensory region. During hypnotic analgesia, highly hypnotizable individuals evidenced CBF increases in the somatosensory cortex, while low hypnotizables showed decreases. While one would expect changes in somatosensory cortex, one would have predicted decreases rather than increases during hypnotic analgesia among the highs.

A key question in the field is whether hypnotic effects on perception occur in the primary association cortex or in structures that mediate attention and conflict detection, such as the anterior cingulate. There is evidence that competitive attention tasks may involve activation trade-offs in primary processing areas without any accompanying executive function activation to manage the balance (Fan *et al.*, 2002).

7.6.5. Neurotransmitters and hypnosis

It is reasonable to assume that certain neurotransmitter systems are especially involved in hypnotic phenomena. This type of investigation has proven fruitful in sleep research, with Hobson's demonstration of a shift from noradrenergic to cholinergic activity in sleep, especially in rapid eye movement (REM) sleep (Hobson and Stickgold, 1995). Spiegel and King (1992) demonstrated a robust correlation between hypnotizability and levels of HVA, a dopamine metabolite, in the CSF. This study was based on Pribram and McGuinness's work on activation and arousal and that of Tucker and Williamson (1984) on hemispheric laterality. This theory implicated dopamine in activation, which increases circuit redundancy and focusing, versus arousal, which decreases circuit redundancy, deploys attention more broadly and

is noradrenergic. Based on the Posner model of attention, the anterior attentional system involves activation and focusing, localized to the anterior cingulate and right frontal cortex. These areas are rich in dopaminergic neurons.

The idea is that hypnosis is activation without vigilance, a form of alertness or consciousness but with less sympathetic activation. This would be consistent with the observation of Aston-Jones *et al.* (1984) of an adrenergic role in vigilance, and that of Morrison and Foote (1986) that the posterior visual system is strongly innervated by norepinephrine pathways, including the pulvinar and superior colliculus. They found weaker noradrenergic innervation of more ventral pattern recognition pathways. Posner and Peterson (1990) cited Clark *et al.* (1989) as showing that manipulation of norepinephrine levels pharmacologically had specific effects on attention shifting. Posner and colleagues (Berger and Posner, 2000) found that patients with right parietal lesions were especially affected by the omission of a warning signal, while those with left parietal lesions were not. These noradrenergic pathways arise in the locus coeruleus and are right-lateralized. Posner and Peterson (1990) postulate that activation of norepinephrine works through this posterior attention system. In the anterior attention system, the alerting component increases the speed of response selection but allows for a lower quality of information (Fan *et al.*, 2002). This is information processing with a reduction in vigilance, or evaluation of the information processed.

A crude analogy might be drawn to suggestibility or responsiveness to cues regardless of their incongruity. We could think of the kind of social input that forces the individual to increase orienting, likewise forces them into a noradrenergic mode of interaction, heightening stress and its related health consequences, whereas a supportive hypnotic input is one that allows the person to decrease vigilance and shift more into a mode of target detection, activation and alerting, which is more consistent with dopaminergic and/or cholinergic activity. Thus, the idea that selective activation of the anterior attention system would be consistent with the idea of alerting without vigilance, with a relative suppression of noradrenergic input and perhaps, therefore, output.

Our observation of a correlation between hypnotizability and CSF HVA further implicates

specific involvement of the frontal lobes where the majority of dopaminergic pathways exist, followed by the basal ganglia. It is particularly interesting that the anterior cingulate gyrus is rich in dopaminergic neurons (Williams and Goldman-Rakic, 1998), providing converging evidence that the hypnotic state, which involves both arousal and focusing, may be associated with activity in the anterior cingulate gyrus. This is consistent with Rainville's PET study showing involvement of the anterior cingulate during hypnotic analgesia (Rainville *et al.*, 1997, 1999; Hofbauer *et al.*, 2001). However, these studies showed that hypnotic analgesia associated with decreased concern about the pain (as opposed to decreased perception of the pain) was associated with *decreased* activity of the anterior cingulate gyrus. So, based upon this evidence, hypnosis does not simply involve turning 'on' the anterior cingulate—indeed hypnotic analgesia seems to work in part by turning it off (Rainville *et al.*, 1997, 1999). More research is needed on the role of the anterior cingulate gyrus in hypnotic analgesia and other forms of hypnotic experience.

7.6.6. Involuntariness and manipulation of 'agency'

One can think of the brain as being divided into an anterior effector portion and a posterior receptive portion: action versus perception. Work on autobiographical memory suggests that it commences in the frontal lobes with a search strategy and works its way posteriorly toward activation of images in the occipital lobes. This is controlled, desired activity accompanied by a willing sense of agency. In contrast, PTSD seems to move from back to front, with unbidden intrusive images that are experienced as uncontrolled and unwelcome (Horowitz *et al.*, 1993). Brain imaging in PTSD (Rauch and Shin, 1997) shows hyperactivation of hippocampus (memory), amygdala (emotion) and occipital cortex (imagery), and hypoactivation of Broca's area (speech). Thus the deep and posterior portions of the brain are activated, while the effector systems, especially speech, are inhibited, adding to the sense of helplessness and involuntariness in PTSD. Such individuals feel they are being retraumatized by their memories.

There would seem to be a paradox: agency would seem to be associated with efferent activity rather than passive perception. Yet it is not uncommon that people engaged in motor performance lack self-awareness—actors, athletes, people in 'flow' states (Csikszentmihalyi, 1991). Thus agency does not uniformly accompany activity, even voluntary activity. One way to resolve this apparent paradox is to conceptualize self-awareness as a perception. Even if agency is best demonstrated by action, it may not be perceived if there is some inhibition of perception, for example if perceptual processing is saturated with intrusive imagery, or redirected through hypnotic instruction. Motion can occur in hypnosis without the perception of agency. The well-established ability of hypnosis to alter perception may account for its less well understood ability to alter identity, memory and consciousness—perception of self. Perception of motor activity is complex—it involves expectation of a response to a motor act initiated—hence we cannot tickle ourselves. Thus, altering perception has great potential to alter the perception of agency in regard to our own actions.

Another way to think about the evidence is that systems are affected that both respond to and manipulate perceptions. As noted above, typically, we respond to perceptions and manipulate words. But in hypnosis, we seem to do the opposite: respond to words and manipulate perceptions. The majority of Stroop studies reviewed above indicate that words can be delexicalized by altering perception, but this is done in response to verbal instructions that in some ways do not make sense—the words are in English but they are perceived as unreadable, and Stroop interference decreases (Raz *et al.*, 2002, 2003, 2005, 2006; Raz, 2005). Indeed, Raz found that reduced Stroop interference in hypnosis was associated with reduced activity in the anterior cingulate gyrus. In a more recent study, he and Kirsch (Raz *et al.*, 2006) concluded that suggestion independent of hypnotic induction is responsible for the reduced Stroop interference.

This issue is very usefully addressed in the chapter by Oakley (Chapter 14, this volume). He notes that different components of hypnotic induction (absorption versus relaxation) and the content of the hypnotic instruction

(hallucination versus imagination) may alter the nature of the hypnotic experience. He concludes that even when subjective reports of effects of instruction pre- or post-hypnosis are similar, different sites of brain activation can be identified (Rainville *et al.*, 2002). This includes posterior cingulate and ventrolateral prefrontal cortex. He also raises the intriguing idea that the nature of the hypnotic state and the content of hypnotic instructions may either reinforce or interfere with one another, so that in effect the nature of the hypnotic state may be phasic rather than tonic. He notes another possibility (Derbyshire *et al.*, 2004), that hypnotic induction may reduce conflict monitoring and cognitive control rather than increase absorption, thereby reducing rather than enhancing performance. He recommends that these interesting issues be addressed through new research designs designed to tease them apart, and more specific examination of differential regional brain activation.

In the study of Kosslyn *et al.* (2000), the instruction in the nonhypnotic condition was to ‘remember and visualize’ rather than to ‘imagine.’ This was designed to be more like the hypnotic alteration of perception, without becoming too similar to a hypnotic induction. Oakley is correct in stating that the instructions were not completely identical, but they both involved mobilization of an instruction to perceive rather than imagine the color manipulation. Interestingly, it was only the combination of the color altering instruction and the hypnotic induction itself that produced significant blood flow changes observed in the left fusiform region.

In hypnosis, relatively ‘illogical’ instructions to alter perception are accepted uncritically, and perception is changed, with resulting alterations in primary association cortex (e.g. Kosslyn *et al.*, 2000) or the anterior cingulate gyrus (e.g. Crawford *et al.*, 1993; Rainville *et al.*, 1997). Perception is always a combination of raw sensory input and memory—stored images that facilitate pattern recognition (Kosslyn and Koenig, 1992). Thus all perception is part hallucination, and in these hypnotic paradigms we seem to set up a competition between perception and imagination. Thus, analogous to the explication of dreaming as a kind of perceptual

processing without the perceptions (Hobson and Stickgold, 1995), the hypnotic state could be characterized as a different kind of perceptual processing with only partial perception that is altered by expectation and memory, hence, hypnotic hallucination and alteration of perception, such as analgesia. Other anatomical systems that must also be involved in hypnotic perceptual alteration include thalamic pathways, given the especially strong effect of hypnosis on pain, which is also processed in the thalamus and the periaqueductal gray. The reticular activating system may well be involved, since it mediates alertness and arousal.

Therefore, hypnosis is supported by neural activity that allows for highly focused attention, an ability to manipulate sensory input and a reduction in self-consciousness. It involves intense cognitive activity that is at the same time experienced as relatively effortless. It represents an augmentation of subjective management of experience involving intensification of imagination.

7.7. Future directions and challenges

As brain imaging techniques become more sophisticated, they enable us to improve temporal, spatial and functional resolution of brain activity during hypnosis, and therefore to better identify differences among low and high hypnotizables. Future questions that can be addressed include further identification of special brain regions associated with the hypnotic state, effects of hypnotic perceptual alteration on specific brain regions, genetic and neural wiring differences between low and high hypnotizables, and the activity of specific neurotransmitter systems related to hypnosis, for example involving pharmacological challenge or blockade, and PET or MRI ligands specific to neurotransmitter function. The research reviewed here demonstrates that hypnotic perceptual alteration clearly affects brain function.

The nature of the specific hypnotic instruction matters a great deal. Positive hallucinations have the opposite effect of negative ones, over-riding attention to external stimuli rather than competing with them. Those instructions that have the effect of reducing perception by creating an

illusory obstruction to it reduce brain response to perception in the cognate sensory cortex, as measured by ERP amplitude and regional blood flow. There is evidence that hypnotic perceptual alteration involves changed activity in the requisite sensory cortex, as well as altered function of attentional systems. Clearly the nature of the hypnotic instructions can shift the balance: direct sensory alteration instructions that are not subject to derailing from partial response seem to alter response in sensory association cortices, while instructions to alter response to stimuli seem to trigger changes in the anterior attentional system.

Hypnosis seems to involve activation without arousal, and may be particularly mediated via dopaminergic pathways. It also seems to involve control over the functioning of the default mode network, inhibiting self-referential reverie in the service of attention and sensory alteration, and perhaps inducing dissociation.

Hypnosis should also become an important tool in studying the neural basis of control systems in the brain. Future studies of automaticity, regulation of sensory, motor and somatic function involving hypnosis coupled with newer brain imaging techniques are likely to help us better understand intention, action and perception. The creed of empirical research is that seeing is believing. Neurobiological research with hypnosis helps us to understand how believing is seeing, as well.

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CHAPTER 8

A psychoanalytic theory of hypnosis: a clinically informed approach

Michael R. Nash

8.1. Introduction and historical foundations

In this era of large group, controlled studies conducted in well-lit laboratories, analyzed with the latest in multivariate statistics, it is easy to lose sight of the fact that both hypnosis and psychoanalysis emerged in the nineteenth century as medical procedures designed to treat the ailments of patients in real-world settings. Early hypnosis theorists (Charcot, 1886; Janet, 1889; Freud, 1900/1953) were practitioners who based their theory on what they encountered in the clinic. What they were observing was the nature of their patient's misery; the conditions which support therapeutic change; the structure and pace of that change; and the repercussions for the patient's ability to work and love. When there was an experiment, it was an intensive affair—a case study or a series of case studies where one patient was observed more or less continuously over a substantial period of time. In this regard, hypnosis and psychoanalytic theorists were on the same epistemological page. For both, practice was the natural laboratory which informed theory. Hypnosis and psychoanalysis were soon to part ways.

In the 1930s and 1940s most of experimental psychology enthusiastically embraced Fisherian statistics, sampling theory and large group designs (but see Skinner, 1938, 1956). So did hypnosis researchers. Beginning with Hull (1933) and extending through White (1937), Orne (1959), Hilgard (1965) and many others, hypnosis research flourished, accumulating an impressive and foundational track record of carefully conducted work based on aggregate effect size and analysis (i.e. group means and variability). Whatever status hypnosis enjoys within contemporary science is a direct product of this effort. However, there have been three related consequences of the rush to laboratory group designs in hypnosis: (1) hypnosis research is less often conducted by those intensively active in clinical work; (2) hypnosis research is most often conducted with nonpatient undergraduates in psychological laboratories; and (3) the unit of analyses in these studies is almost always the aggregate (i.e. nomothetic research) and not the individual (i.e. idiographic research). For better or worse, hypnosis research became more like psychological research in general: relatively detached from the clinical setting and its ethos of the individual.

In contrast, the psychoanalytic community stubbornly stayed the epistemological course. For the most part, psychoanalysis rejected large group designs, and clung tenaciously to case-based evidence alone. Because of this narrowness, psychoanalysis is now relatively isolated from mainstream psychology (but see Westen, 1998). However, what this means for the field of hypnosis is that psychoanalytic theorists who conduct hypnosis research generally have retained a lively practice, have more often focused on how change occurs over time within the individual, and have insisted on a comprehensive and pragmatic theory that in turn informs clinical technique.

It is my position that a robust theory of hypnosis in fact requires an ongoing productive discourse between a critical mass of laboratory researchers and practitioners. I believe that a lean psychoanalytically informed theory can provide the venue for this discourse. Herein is the three-fold promise of a psychoanalytic approach to hypnosis. First, it is informed by the actual experiences practitioners encounter. Thus it provides a descriptive foundation for a science that suits the nature we are trying to comprehend. Second, it encourages a focus on individual change over time and might well inspire practitioners to make case-based research contributions of their own. If so, the practice setting might once again become the natural laboratory for hypnosis that it once was. Finally, by harnessing clinically grounded evidence alongside group experimental methodologies, we might well accelerate the progress we are making in understanding the structures and mechanisms underlying hypnosis (see also Borckardt and Nash, Chapter 30, this volume).

Before I present the contours of a psychoanalytic model of hypnosis, I describe some of the core requirements of a theory.

8.2. Core concepts and requirements

8.2.1. What does it mean to explain anything?

In a paper with Peter Killeen (Killeen and Nash, 2003), we noted that whereas explanations of

ordinary phenomena regularly exercise scientists, explanations of extraordinary ones such as hypnosis often just fatigue them. Where does one start? ‘Divide and conquer’ is the preferred strategy in physics and chemistry, but division works best along natural lines of fracture. Where are those for hypnosis? First, let us consider how Aristotle (1929) confronted a much larger range of unexplained phenomena. He provided four components of an explanation. Though below I list all four of Aristotle’s components, it is the third, formal causes (i.e. formal theory), which is the natural topic of this chapter.

1. *Efficient causes.* These are events that occur before a change of state and trigger it (sufficient causes) or events that do not occur before an expected change of state and whose absence prevents it (necessary causes). Efficient causes identify the early parts of a stream of events that are essential for occurrence of later parts; they tell us what initiates a change of state. For hypnosis this would have to do with procedural matters which define the hypnotic situation (see also Barnier and Nash, Chapter 1, this volume).
2. *Material causes.* These are the substrates, the underlying mechanisms. Neuroscientific explanations of hypnosis exemplify such material causes.
3. *Formal causes.* These are analogs, metaphors and models. They are the structures with which we describe phenomena, and which permit us to predict and control them. The physicist’s favorite formal cause is a differential equation. The chemist’s is a molecular model. The Skinnerian’s is the three-term contingency of stimulus, response and reinforcer. The psychoanalyst’s model are the five propositions of unconscious process, conflict, development, structure and affect regulation (Westen, 1998). Models do not constrain the machinery of the processes they describe. Importantly, models are structures put into correspondence with phenomena, and the same structure may fit more than one phenomenon.
4. *Final causes.* The final cause of an entity or process is the reason it exists—what it does that has justified or sustained its existence. Explanations of evolutionary fitness

are explanations in terms of final causes. Not all phenomena have final causes: a rock *in situ* does not have a final cause. But a rock on the dining-room table does. It might serve as a trivet or paperweight, or object d'art; or it might be waiting transit to the rock garden. A biological feature may exist because of its function (i.e. why it was selected) or because the feature was associated with another which did increase fitness.

Final causes were considered opprobrious because physicists and biologists mistook them for time-reversed efficient causes. That is teleology. Effects of phenomena cannot be efficient causes of that which birthed them. The timing is wrong. But final causes are a different kind of cause. Explanations in terms of reinforcement or evolutionary fitness are explanations in terms of final causes.

8.2.2. What is a theory (formal cause)?

All understanding involves finding an appropriate formal cause; i.e. mapping phenomena to explanations having a structure similar to the thing explained. Our sense of familiarity with the structure of the model/explanation is transferred to the phenomenon with which it is put in correspondence. If the hypnotic state were actually unique, and bore no formal connection with any other phenomena in nature, it would require no explanation. Naming it would be the best we could do. All theories of hypnosis connect hypnotic phenomena to broader structures which shape human nature. In this chapter, those structures proceed from psychoanalytic theory.

A complete theory of hypnosis awaits a complete theory of mind and consciousness, but piecemeal theories abound. In some sense these models are analogies. Hilgard's (1992) theory holds that hypnosis alters executive and control functions such that when the hypnotic response is rendered, the experience of volition is dissociated from it. Because the effort is dissociated from awareness, the subject experiences the response as 'happening by itself'. Woody and Sadler (Chapter 4, this volume) posit a direct effect of hypnosis on executive control whereby the usual self-monitoring is relaxed, and the

hypnotic suggestion itself then affects control structures without taxing executive functioning. The hypnotic response is experienced as 'happening by itself' because it is actually occurring without much participation by central mechanisms. Kihlstrom (Chapter 2, this volume) focuses on the notion of illusion. Other theorists propose an algorithm of differential neural activation (Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume). But whatever the analogy or formal model, these theorists quickly acknowledge the social forces that are also at play.

Social learning theorists (e.g. Edmonston, 1991; Kirsch, 1991; Wagstaff, 1991; Spanos and Coe, 1992) for the most part forswear cognitive shifts, neural activation and abilities, construing hypnosis as a product of social forces alone, or almost alone (for a review see Lynn *et al.*, Chapter 5, this volume). There are considerable differences among these theorists regarding the nature of hypnotic response, but if forced to epitomize these formal models they might be something like, 'hypnosis as strategic play' or 'hypnosis as deference' or 'hypnosis as dramatology' or 'hypnosis as self-fulfilling prophesy.' But one characteristic holds this family of social theories together and distinguishes it from the cluster of theories described in the preceding paragraph. They are single-process models, and that process is social. If these theorists have sometimes stated that the operation of other factors (e.g. ability independent of social influences) is not inconsistent with their theories, this must be weighted against what they have written in their theory papers:

From a sociocognitive perspective, 'hypnotic behaviors' are social artifacts (Spanos, 1991, p. 355).

The effectiveness of a hypnotic induction appears to depend entirely on people's beliefs about its effectiveness, and highly hypnotizable subjects respond in accordance with their beliefs about hypnotic responding. In other words, response expectancy may be the sole determinant of the situations in which hypnotic responses occur, and also of the nature of the responses that occur in those situations (Kirsch, 1991, p. 460–461).

Once expectancy effects are eliminated, there may be nothing left (Kirsch, 1991, p. 461).

As Barnier and I noted in our introduction to this book (Barnier and Nash, Chapter 1, this volume), single-factor explanations can be a result of defining a phenomenon too narrowly, thereby compromising its *in vivo* relevance and complexity. Hence we must devote some attention to the matter of definition.

For the sake of economy, in this chapter, I here define hypnotic experience as per Auke Tellegen's still wonderfully pragmatic definition:

It is the ability to represent suggested events and states imaginatively and enactively in such a manner that they are experienced as real (1978/1979, p. 220).

The sturdy elegance of this definition does not require that the subjective experience be unvisited by those who haven't been administered a formal hypnotic procedure. The suggested events are given and the subject either experiences them imaginatively as real or not. If not, the subject is probably not hypnotized. If so, the subject probably is. Further, I will occasionally use the term 'hypnotic state' to refer to hypnosis-as-product. Calling a cluster of parameter settings a 'state' is a matter of semantics and pragmatics, not ontology (Killeen and Nash, 2003). It has nothing to do with what 'is', and everything to do with the mundane practicalities of simple description. States are not, after all, causal variables; they are indications that key parameters of a system are within a new range. So it is with hypnosis. For the sake of clarity, we need to shed the angst of past generations of hypnosis theorists; we need to be pragmatic, and come up with a term that describes hypnosis-the-product. 'State' will serve the purpose as long as we keep in mind that the term 'hypnotic state' is not causal, and is not a unique condition, unvisited by un hypnotized people. These definitional and epistemological matters are addressed more fully in the introduction to this book (Barnier and Nash, Chapter 1, this volume).

8.3. Hypnosis and psychopathology

From the beginning, those who used hypnosis to treat patients observed that alterations in mentation (perceptual, cognitive, relational and

behavioral) during hypnosis seemed functionally and systematically related to alterations encountered in some forms of psychopathology and other states (dreams, fugue, toxic conditions). Three fundamental observations concerning hypnosis and psychopathology have been noted by theorists past and present (Braid, 1843; Charcot, 1886; Bernheim, 1887/1965; Breuer and Freud, 1893–1895; Pavlov, 1923; Janet, 1925; Hilgard, 1965; Fromm, 1972; Woody and Farvolden, 1998; Oakley, 1999b):

1. *Suggested hypnotic phenomena and symptoms.* Both hypnosis and psychopathology can involve dramatic and aberrant shifts in behavior or experience in the absence of obvious impairment in relevant biological structure (e.g. tumor, central nervous system lesions, chemical imbalance). There is at least a phenotypic similarity between suggested hypnotic phenomena and the corresponding symptoms of some psychiatric patients. There is also evidence that the brain structures involved in psychopathology may to some degree be the same ones mediating the hypnotic response to specific suggestions altering the experience of pain, movement and perception.
2. *Unsuggested hypnotic experience and anomalous experience.* Even without specific suggestions there is a similarity between how highly hypnotizable subjects describe their ongoing unsuggested hypnotic background experience and how people describe pathological or anomalous experiences. Further, here again the neural structures mediating pathological states seem to be involved with the hypnotic state.
3. *Hypnosis as effective treatment.* Hypnosis is effective in the treatment of a number of psychiatric disorders.

Together, these three enduring observations pose an intriguing possibility, one that was not lost on early theorists—that by understanding hypnosis we may better understand psychopathology and anomalous experiences, and by extension human nature. Each early theory of hypnosis cast the connection between hypnosis and pathology with a different analogy. For Braid (1843), the shared underlying process in psychopathology and hypnosis was a disruption

in sleep–wake consciousness; for Charcot it was a subtle neural disorder, for Janet it was a dissociation; for Bernheim it was an untoward suggestibility; and for Freud it was a regression akin to (but not the same as) dreaming. All were applying their own models to explain the three observations noted above. I consider each of these observations in turn.

8.3.1. Suggested hypnotic phenomena and clinical symptoms

When otherwise nonsymptomatic subjects are hypnotized, they can elicit a host of behavioral and experiential phenomena characteristic of psychopathology. Hypnotically suggested alterations in perception and sensation, cognition, emotion, behavior and experience of the self are quite common, even in the relatively neutral context of the experimental laboratory (Sutcliffe, 1961; Noble and McConkey, 1995; Kosslyn *et al.*, 2000; Burn *et al.*, 2001; Roelofs *et al.*, 2001; Barnier, 2002; Barnier and McConkey, 2003; Bryant and Mallard, 2003; Bryant, 2005).

Functional disorders of psychogenic origin (psychogenic amnesia, hysterical blindness, anesthesia) and their hypnotic counterparts are alike in that they generally do not conform to patterns of organic illness that might otherwise explain the shift in function or experience (Nash *et al.*, 1987; Oakley, 1999b; Tallabs, 2005). But beyond the impressionistic observations beginning at the turn of the century, few studies have carried out a fine-grained analysis of whether psychogenic symptoms (e.g. hysterical blindness) and their hypnotically produced counterparts (e.g. hypnotically induced blindness) are really similar behaviorally. That is, in addition to not looking like an organic disturbance, do these aberrations share cognitive or affective properties? Those findings that are extant generally support the notion that, at least in the case of conversion reactions, hypnotically induced functional aberrations are behaviorally and experientially similar to their hysterical counterparts, and dissimilar to organically based disease (Malmo *et al.*, 1954; Sackheim *et al.*, 1979; Bryant and McConkey, 1999). As importantly, there is now a rich neuroimaging literature that has examined neurological shifts during suggested hypnotic

suggestions, and mapped these shifts onto what we know about normal and pathological functioning (for a fuller review see Oakley, Chapter 14, this volume).

Clinically we encounter anomalies with pain patients. Some patients with acute tissue damage report intense pain but little suffering. For others, there is negligible pain intensity but immense suffering (Cervero, 2005). In part this is due to these experiences being mediated by different parts of the brain. Psychological factors play an immensely important role in how patients experience pain and respond to it (see Jensen and Patterson, Chapter 20, this volume). It is of interest to test whether differential hypnotic manipulation of pain intensity or suffering elicits brain activations congruent with the targeted effect: somatosensory activation for intensity and more anterior cingulate activation for suffering. In the area of altered pain experience a pair of studies examined whether the experience of pain might involve two distinct brain pathways, one supporting the unpleasantness (or emotional) component of pain, and another the sensory (or intensity) component of pain. In this work, when hypnotic suggestions were given for alteration of the emotional component of pain, the brain showed activation in the right anterior cingulate in direct proportion to the direction and extent of altered suffering (Rainville *et al.*, 1997). When the hypnotic suggestions instead targeted the intensity component of pain, the brain showed activation in the expected somatosensory cortical areas in direct proportion to the direction and extent of altered pain intensity. When suggestions were administered for changes in pain intensity alone, the right anterior cingulate was unchanged (Hofbauer *et al.*, 2001). This line of research not only offers a plausible neural model for how pain patients can suffer profoundly regardless of sensation level (e.g. as in psychogenic pain disorder), it also demonstrates that hypnotic suggestions differentially impact these brain structures depending on the aspect of pain targeted by the hypnotic suggestion (suffering or intensity).

Another line of neuroimaging work has examined phantom limb pain. The pain and anomalous sensations experienced in amputated limbs can be alleviated using hypnotic

suggestions (Oakley *et al.*, 2002). Interestingly, when phantom limb patients were administered hypnotic suggestions for movement of the lost limb, there was an appropriate activation of contralateral somatosensory areas associated with actual movement of the lost limb (Erslund *et al.*, 1996; Willoch *et al.*, 2000). Similarly when hypnotic suggestions were given for movement of the phantom limb, activations in brain areas normally associated with pain intensity were activated. Taken together, these researchers observed patterns of neural activation that tracked well against the hypnotic suggestions administered.

Beginning with Charcot (1886), conversion disorders have been closely associated with hypnotic phenomena. These were also the ‘hysterical conversion’ patients of Freud (1905/1953). There are now a number of studies comparing the neural activation observed during hypnotically suggested paralysis with that elicited by conversion disordered patients. Halligan and his colleagues found an unusual pattern of right anterior cingulate cortex (ACC) and right orbitofrontal cortex activation along with lack of activation in contralateral sensorimotor cortex in a conversion disordered patient (Marshall *et al.*, 1997; Halligan *et al.*, 2000). The research team replicated this same pattern with a normal highly hypnotizable individual given suggestions for paralysis. Subsequent work documented that this pattern of brain activation could be reproduced among a group of highly hypnotized subjects, and that it could not be attributed to faking or malingering (Oakley *et al.*, 2003; Ward *et al.*, 2003).

Another study cited the aberrations in self-agency reported in some psychotic, obsessive and neurological conditions—specifically the loss of volitional control over body movements. Blakemore *et al.* (2003) examined the changes in the brain when six highly hypnotizable individuals were given suggestions for nonvolitional arm movements. This was compared with brain activation during two other conditions: volitional movement and truly passive movement (facilitated by a pulley mechanism attached to the arm). The volitional movement condition was associated only with the usual contralateral activations of the motor control areas of the brain. In contrast, the truly passive movements (with pulleys) were associated with increased

activations in the bilateral cerebellum and parietal cortex regions. Interestingly during the hypnotically suggested nonvolitional movement condition, both patterns were observed. Hence, when actual motor behavior is experienced as occurring without volition (as in the hypnotic condition), the pattern of brain activation includes a component which looks very much like truly passive movement (as though the arm was moving by itself), in addition to the usual contralateral motor cortex activation.

Psychotic patients sometimes suffer from hallucinations. Hallucinations can also be created with highly hypnotizable subjects in the laboratory. The right ACC appears to be related to schizophrenic hallucinations (Cleghorn *et al.*, 1992). Szechtman *et al.* (1998) examined whether this area of the brain might be involved with hypnotically induced auditory hallucinations among eight highly hypnotizable normal subjects. They found that in only the hypnotic hallucination condition and the ‘actual hearing’ condition was there an activation of the right anterior cortex. The extent to which the subject experienced the hallucinated auditory experience as external was positively and significantly correlated with the extent of right ACC activation. This effect was not observed in control conditions. Here again the brain changes observed with a hypnotic suggestion map well against the activations observed in clinical pathology.

8.3.2. Unsuggested background experience of hypnosis and some pathological conditions

For some types of pathology, there is a striking similarity between patients’ descriptions of their subjective experience and reports of the subjective experience given by normal hypnotic subjects. If we examine some items from a standard inventory of subjective experience of hypnosis (Field’s Scale of Hypnotic Depth; Field, 1965), it becomes clear that unsuggested shifts in experience occur during hypnosis—shifts that in another context could easily be mistaken for signs of psychotic, dissociative, anxiety, post-traumatic stress or impulse control disorders: ‘Time stood still’, ‘I felt dazed’, ‘Everything happened automatically’, ‘Sometimes I did not know where I was’, ‘Things

seemed unreal', 'Parts of my body moved without my conscious assistance', 'I felt uninhibited'. Breuer and Freud (1893–1895), Janet (1925), Frankel (1990) and Spiegel and Spiegel (2004), among others, noted these similarities and hypothesized that various pathological states (pathological anxiety, conversions, stupors, ruminations and gross dissociations) were actually examples of spontaneously occurring self-hypnosis episodes.

Again, a number of brain imaging studies shed light on this issue. In a series of studies, Rainville and his colleagues concluded that there is a pattern of activation which provides strong evidence that alterations in absorption and attention are important aspects of the hypnotic state *per se* (Rainville *et al.*, 1997, 1999, 2002). Oakley (Chapter 14, this volume) points out that this pattern of activation might set the stage for the altered shifts in experience of time, self, agency and attention so commonly described by patients and theorists (e.g. Woody and Sadler, Chapter 4, this volume). More recent neuroimaging studies by Oakley and his colleagues suggest that the 'default mode' in the hypnotic state might be different from that in the nonhypnotized state. Oakley concludes that 'There is a distinct steady-state change attributable to a traditional hypnotic induction procedure, relating to alterations in attentional processes, spontaneous conceptual thought, feelings of absorption, relaxation and mental calm following a hypnotic induction procedure' (Oakley, Chapter 14, this volume, p. 384).

The anterior cingulate appears to have a critical mediating role in a number of the neuroimaging studies (Crawford *et al.*, 1993, 1998; Rainville *et al.*, 1997; Szechtman *et al.*, 1998). This region is involved with emotional experience and regulation, and allocation of attention (Morecraft *et al.*, 1993; Devinsky *et al.*, 1995). It is a 'crossroads' between the limbic system and the higher functioning brain, and plays a special role in managing emotional material. It seems possible that the experiential shifts we see during the hypnotic state reflect the altered function of the right anterior cingulate.

8.3.3. Hypnosis as an effective treatment in certain disorders

Another argument for a shared underlying process linking hypnosis and psychopathology

or anomalous states has been the long and well-documented record of hypnosis as an agent of cure for many types of mental disorders over two centuries of clinical practice. The claims have sometimes been exaggerated, but there remains a solid and respectable research literature that supports the clinical efficacy of hypnosis (for a thorough review of the research literature, see Moore and Tasso, Chapter 29, this volume). It seems reasonable that if an intervention can alter or even cure debilitating symptoms, then it probably affects the process underlying the symptoms. Though reasonable, the logic of this argument is not without flaw. Certainly there are ameliorative interventions that may have only obscure and very limited relevance to the essential features of the disease process (e.g. aspirin for headaches). Still, the consulting room is the most important *in vivo*, real-world setting for hypnosis. To be ecologically relevant, a theory of hypnosis must explain how and why hypnosis is effective with patients suffering from mental disorders.

Taken together, these three observations are as difficult to ignore now as they were 100 years ago at La Salpêtrière: when normal individuals are hypnotized and given suggestions for changes in the experience of cognition, perception and emotion, not only does the presentation look like what we see in psychopathology, some of the same brain areas are involved. Similarly, the background experience of hypnosis-absent specific suggestion may involve an experience of self that is phenomenologically and neurally similar to what we observe among our patients. Finally, the clinical utility of hypnosis demands a theory that can explain what is happening when we use hypnosis with patients, and how we might use it more wisely.

The similarities between hypnosis and certain forms of psychopathology, along with the clinical efficacy of hypnosis, are valid and highly suggestive of shared processes. We can embrace this notion, but must not take it too far. After all, though there may be some shared underlying processes, hypnotic experience and psychopathology are not the same thing. Differences abound. The genesis of psychopathology is unambiguously multifaceted (Retew and McKee, 2005; Tackett, 2006). The same can be said for

hypnosis (see theory chapters in this volume). Hypnotic phenomena are far more transient than psychiatric symptoms; hypnotic alterations in perception, mood, behavior and experience are quickly and easily reversed. Alas this is not the case with most forms of psychopathology (although anomalous states may come and go). Further, manifestations of psychopathology are more often accompanied by some form of dysphoria than is the case with hypnosis; hypnosis is usually experienced by the subject as either unremarkable or pleasant (Coe and Ryken, 1979).

8.4. Topographic regression as a shared underlying process in hypnosis and psychopathology

Freud was acutely interested in hypnosis and its relationship to psychopathology, especially hysteria. In an early work co-authored with his mentor, Josef Breuer (Breuer and Freud, 1893–1895), Freud theorized that symptoms of hysteria were actually manifestations of self-induced ‘hypnotic states’ brought about by the threatened eruption of early traumatic memories into awareness and the subsequent conversion (expression) of these memories in the somatic or functional sphere. In this very early pre-psychoanalytic formulation, the underlying process shared by hypnosis and hysteria was a ‘splitting off’ of certain mental contents from the mainstream of awareness. Therapy then was curative to the extent that the therapist could exploit the ability of hypnosis to isolate and focus on the somatically expressed yet profoundly repressed affect-laden memories.

8.4.1. Freud’s early notions of psychological regression

As early as ‘The Project’ (Freud, 1895/1966, p. 337), Freud was beginning to define his concept of psychological regression, connecting it with the emergence of primary process thinking in sleep, dreaming and hypnosis. Here Freud noted the ‘motor paralysis’ in sleep, the ‘unexcitability of the sense organs’ in hypnosis, and the ‘withdrawal of the cathexis of attention’ in both, and concluded that these were the proximal causes of a state-like reorganization of thought processes,

characterized by a predominance of primary process mentation in sleep and hypnosis. Here the pre-psychoanalytic notions of regression begin to mature.

8.4.2. Temporal and topographic regression

In ‘The Interpretation of Dreams’ (1900/1953), Freud gave a very clear example of how free association, the process of dream interpretation, self-observation, sleep and hypnosis share a kinship. In outlining the state of mind required for dream interpretation, Freud noted:

This involves some psychological preparation of the patient. We must aim at bringing about two changes in him: an increase in the attention he pays to his own psychical perception, and the elimination of the criticism by which he normally sifts the thoughts that occur to him . . . I have noticed in my psycho-analytical work that the whole frame of mind of a man who is reflecting is totally different from that of a man who is observing his own psychical processes. In reflection there is one more psychical activity at work than in the most attentive self-observation . . . In both cases attention must be concentrated, but the man who is reflecting is also exercising his *critical* faculty . . . the self-observer on the other hand need only take the trouble to suppress his critical faculty. If he succeeds in doing that, innumerable ideas come into his consciousness of which he could otherwise never have got hold . . . What is in question, evidently, is the establishment of a psychical state which, in its distribution of psychical energy (that is, of mobile attention), bears some analogy to the state before falling asleep and no doubt also to hypnosis . . . As the involuntary ideas emerge, they change into visual and acoustic images . . . (pp. 101–102).

Again in ‘The Interpretation of Dreams’ (Freud, 1900/1953) and later in ‘A Metapsychological Supplement to The Interpretation of Dreams’ (Freud, 1917/1957), Freud identified two types of psychological regression—‘temporal’ and ‘topographic’—which he invoked to explain a host of special mental conditions (e.g. dreaming, psychopathology, hypnosis, transference, group psychology). Freud was elegantly concise in drawing the distinction between these two types of regression, but the difference became quite muddled

again even during his lifetime (Jackson, 1969; Tuttmann, 1982). Though the centerpiece to my paper is the construct of topographic regression, I here describe both types of regression as articulated by Freud.

8.4.2.1. Temporal regression

Patterning his concept of temporal regression on work in developmental morphology, Freud posited that psychic development proceeds from less complex forms to more advanced, organized forms. But Freud maintained that these old forms remain intact and accessible. Under certain circumstances, these early stages 'again become the mode of expression of the forces in the mind' (Freud, 1915/1957, p. 285), and 'the essence of mental disease lies in a return to earlier states of affective life and of functioning' (p. 286). Freud explicitly defined hypnosis as a temporal regression—a return to an infantile mode of functioning (Freud, 1921/1955). Many contemporary psychoanalytic theorists and cognitive-developmental psychologists have embraced the idea that old developmental stages remain imperishable and that psychopathology is most essentially a temporal regression to one or more of these previously abandoned modes of relating to self and others (Werner, 1948; Balint, 1968; Bion, 1977; Stolorow and Lachmann, 1980; Kohut, 1984). The notion that temporal regression is possible and that psychopathology is a lawful undoing of development is exceedingly appealing to clinicians and theorists who struggle to make sense of the seemingly random disorganization arising from pathology. A formulation based on temporal regression defines a certain equivalence between presumed developmental deficits in childhood and the adult symptoms themselves. It charts a course for treatment involving a therapeutic regression to the developmental stage in question, and a gradual resumption of development from that point. Similarly, hypnosis theorists have invoked Freud's concept of temporal regression to explain similar aberrant changes in the cognition, perception and behavior of hypnotic subjects (Ferenczi, 1909; Erickson and Kubie, 1941; Kubie and Margolin, 1944; Weitzenhoffer, 1957).

But there is good reason to reject Freud's notion of temporal regression. Beginning with Piaget, most developmental and clinical theorists

hold that old structures do not remain intact, untouched by subsequent development and experience. They argue that the psychic structure of a child is unalterably changed during the course of development; as a consequence, old stages or infantile modes of functioning are simply not 'there' to be retrieved (Spitz, 1965; Piaget, 1973; Peterfreund, 1978; Rubinfine, 1981; Eagle, 1984, 2000; Westen, 1998). Indeed, a growing research literature fails to support the notion that adult psychopathology is similar to, or even properly analogous to, normal phases in child development (Harter, 1977, 1986; Flavell, 1985; Harter and Buddin, 1987; Westen, 1989). Furthermore, an exhaustive review of over 100 years of hypnosis research on temporal regression failed to find any special correspondence between the behavior and experience of hypnotized adults and that of actual children (Nash, 1987). Temporal regression, and its requirement that childhood psychic structures reside untouched by later experience, is supported by neither clinical nor laboratory evidence.

8.4.2.2. Topographic regression

Freud's concept of topographic regression (Freud, 1917/1957) was based on his understanding of the reflex arc in neurology and physiology. Here too, regression is a backward movement, but in 'space' rather than time. It is a reverse movement along a path 'from the region of thought-structures to that of sensory perceptions' (Freud, 1905/1960, p. 162); 'in this process thoughts are transformed into images' (Freud, 1917/1957, p. 227)—a backward course that results in a transformation of thoughts into visual imagery (Freud, 1933/1964). Freud noted that the regressive shift from thought to imagery carries with it a shift in form, from secondary process to primary process (Freud, 1916–1917/1963, 1917/1957). Indeed, a rich literature suggests that imagery and primary process are linked, and that these manifestations of topographic regression can be operationalized and reliably measured in the consulting room and the laboratory (Paul *et al.*, 1992; Shevrin *et al.*, 1992; Brakel, 2004; Snodgrass and Shevrin, 2006).

Thus, a cornerstone of psychoanalytic thinking is the notion that psychopathology involves a regressive shift away from secondary-process thinking toward primary-process thinking—a

form of cognition characterized by symbolization, displacement, condensation, non-logical forms of reasoning and relative equivalence of memory and current experience (Rapaport, 1950; Dudek, 1980; Suler, 1980; Schwartz and Lazar, 1984; Brakel *et al.*, 2002; Brakel, 2004). As Freud saw it, primary-process thinking is not restricted to pathological conditions alone; rather, it serves as a constant backdrop to all our waking and sleeping hours. It is in wit, slips of the tongue, art, inebriated states, dreaming and hypnosis that we encounter primary process in everyday life (Freud, 1916–1917). Although Freud's formulation of pathological states as involving this type of regressive shift came to be widely accepted, rigorous empirical examination awaited refinement of objective measures that could track if and how this shift in mentation occurs behaviorally, experientially, relationally and neurophysiologically. Still, for Freud, dreaming is the iconic state of the human organism during which primary process mentation reigns supreme. Hence, very roughly speaking, Freud's topographic message was that hypnosis involves a shift in mentation that nudges the hypnotic subject a little closer to dream-like mentation, and a little more distant from our usual work-a-day mentation.

The research literature is clear on three points. First, the regressive shift from secondary to primary process is not temporal, but topographic: Primary-process thinking in adults does not resemble the 'normal' thinking of small children or infants (Dudek, 1980; Suler, 1980; Schwartz and Lazar, 1984; Holt, 2002). Second, various forms of psychopathology do involve a prominence of primary-process thinking, including thought disorder, alcohol intoxication, marijuana intoxication, paranoid schizophrenia, childhood anxiety, neurophysiological disorder, hemispheric asymmetry, borderline personality disorder, process schizophrenia and sociopathy (Epstein, 1994; Westen, 1998; Erdelyi, 2006). Third, the notion of topographic regression is compatible with current views of parallel architectures of cognition, some of which reside outside of awareness (Westen, 1998; Erdelyi, 2006). For instance the cognitive-experiential self-theory of Epstein (1994) posits an experiential mode of processing that is

holistic, symbolic, emotion-laden and only crudely integrated. The question then becomes: what evidence is there that the same, or a similar, process underlies hypnosis?

8.5. Topographic regression and hypnosis

It is the premise of this chapter that there is an overlap or similarity between the hypnotic state and some aspects of psychopathology or anomalous experience. One way of describing this overlap is that it involves an underlying shift in mental processing that can be characterized as a topographic regression. Though the physiological and/or psychological mechanisms leading to this shift may vary, in hypnosis a pattern of responding emerges, striking a redistribution of key parameters of the system such that thinking, emotion, relationship and self are altered in such a way that there is a prominence of primary-process mentation. It is understood that an essential difference between psychopathology and hypnosis is that in the latter, the topographic regression is incomplete, transient, contained and reversible, perhaps enabling the subject to utilize primary-process material in the service of adaptation ('regression in service of the ego'; Kris, 1936*a,b*; Hartmann, 1958; Schafer, 1958). Thus, among the general population, a capacity to experience hypnosis fully is no more related to manifest psychopathology than is a capacity to dream a great deal, or an ability to be creative, or a capacity for quick wit. These expressions of a topographic regression are contained; psychopathology is not (Dudek, 1980; Suler, 1980).

If, to some degree, the hypnotic state does involve a topographic regression, what should it look like? Here is where we can return to Tellegen's (1978/1979) pragmatic definition of the hypnotic experience to help us with a suitable conditional probability statement regarding hypnosis and topographic regression:

IE: The hypnotic state involves a topographic regression

THEN: When individuals 'represent suggested events and states imaginatively and enactively in such a manner that they are experienced as real'

(Tellegen, 1978–79, p. 220), we should observe the following during the hypnotic state:

1. Changes in thought processes in the direction of greater symbolic, primary-process mentation.
2. Increased availability of affect.
3. Fluctuations in how the body is experienced.
4. Displacement and condensation in the relationship with the hypnotist.
5. A disruption in the experience of self and agency, such that ongoing experience and behavior is described as ‘happening by itself’ with attenuated experience of volitional participation.

I briefly examine the relevant research on these five points.

8.5.1. Changes in thought processes

In eight studies conducted in a number of laboratories, projective tests were administered while the subjects were hypnotized. Some studies compared these protocols with those of a baseline control group; others compared them with within-subject baselines. If hypnosis does involve a shift in mental functioning from secondary-process to more primary-process thinking, then the hypnosis protocols should contain more imagistic, non-logical and other primary-process characteristics. Many of these studies used measures of primary process derived from the Rorschach (Holt, 2005).

Of these eight studies, easily the most comprehensive examination of changes in thought processes during hypnosis was carried out at the University of Chicago (Fromm *et al.*, 1970; Oberlander *et al.*, 1970; Gruenewald *et al.*, 1972). Thirty-two subjects were administered the Rorschach in counterbalanced order—once when hypnotized, once when not hypnotized. Although the Rorschach protocols were scored according to two systems (Holt’s and Klopfer’s), the relevant dependent measure for our consideration was Holt’s measure of primary-process mentation. Within-subject analysis revealed that across all orders and all experimenters, more primary-process material was evident in the hypnosis condition. Though an outstanding example of the careful application of the

within-subject design, this programmatic research could not fully eliminate an explanation of the results based on demand expectations. The one study that did control for demand expectations (Wiseman and Reyher, 1973) examined whether subjects who reported hypnotically induced dreams in response to Rorschach cards would evince more primary-process material on Holt’s Rorschach measure than either nonhypnotized or simulating subjects; their results confirmed that this was indeed the case.

Five studies examined projective test responding, perception and dream activity in light of primary-process activity. West *et al.* (1963) reported more primary-process material during hypnosis on both Rorschach and Draw-A-Person tests when they were administered, with and without hypnosis, to 10 randomly selected male volunteers. A much more rigorously designed investigation (Levin and Harrison, 1976) administered two projective tasks (a Rorschach-card-induced dream and a Thematic Apperception Test story). In the hypnotized condition, as opposed to the nonhypnotized condition, there was increased incidence of primary-process material. In a clever study reported by Barrett (1979), the hypnotic dreams, daydreams and nocturnal dreams of medium to high hypnotizables were examined over a 6-week period. Hypnotic dreams differed from daydreams and were more similar to nocturnal dreams in terms of emotional themes and cognitive distortions. This finding provides some additional evidence of a link between hypnosis and a shift to more primary-process mentation. Finally, a series of studies examining the eidetic-like imagery of hypnotized and nonhypnotized subjects suggested that hypnosis may facilitate imaginal processing of information, with a shift from a sequential, verbal and logical mode during the nonhypnotized condition to a more visual, ‘holistic’ style during hypnosis (Walker *et al.*, 1976; Crawford *et al.*, 1986; Wallace, 1990).

Eight studies examined whether there was a shift in primary-process thinking attributable to hypnotizability or the hypnotic state. Two of these studies found that highly hypnotizable subjects reported more primary process mentation during hypnotically suggested dreams than did low hypnotizables simulating hypnosis (Mare *et al.*, 1994;

Pinnell *et al.*, 1998). Five experiments examined the response of hypnotized subjects to poetry or drawings (Diment *et al.*, 1981; Popham, 1989; Teschuk, 1996; Goeller, 2000). Taken together, they found that when hypnotized, subjects reported poetry and drawings to be more meaningful and emotionally evocative, though in one (Goeller, 2000), hypnotizability was not significantly related to the effect. In another study (Teschuk, 1996), hypnotizability (and not the hypnosis condition) appeared to account for the effect.

There appears to be a reasonable amount of evidence suggesting that there may be a change in thought processing during hypnosis in the direction of symbolic primary mentation, and that this difference is not attributable to demand characteristics.

8.5.2. Increased availability of affect

In a series of studies, my colleagues and I found that hypnotically age-regressed subjects were no more childlike than simulating controls, but they had freer access to more intense emotions. In these studies (Nash *et al.*, 1979, 1985, 1986), hypnotized and simulating subjects were given suggestions to regress to the age of 3 and asked to imagine themselves in various home situations. The experimental procedures assessed how subjects related to their transitional objects (e.g. teddy bears, blankets). The hypnotically age-regressed subjects were significantly more spontaneous, specific and emotionally intense in relation to their transitional objects than the simulating controls. Initially, we suggested that under some circumstances there might be a partial reinstatement of interpersonally relevant affective processes during hypnotic age regression. But our follow-up study (Nash *et al.*, 1986) defined some limitations on the nature of the presumed regression. To determine whether the transitional object reported by each hypnotically age-regressed subject was the same as the subject had had as a child, we independently interviewed the mothers of both the hypnotized and control subjects used in the earlier study. Despite their dramatic emotional reactions to transitional objects, hypnotized subjects were significantly less able than non-hypnotized controls to identify their specific

childhood transitional objects correctly (23 percent accuracy for hypnotized subjects, compared with 70 percent accuracy for controls). Furthermore, all recollections obtained during hypnosis were incorporated into post-hypnotic recollections, regardless of accuracy. We therefore concluded that hypnotic age regression may enhance access to important emotional material (a topographic regression), but may not necessarily involve an accurate reliving of a specific event.

However, it is the neurological and clinical research literatures which most strongly suggest that hypnosis involves a shift in the way emotion is experienced by patients and its impact on sensation, behavior and cognition. First, as already discussed, brain structures associated with affect regulation appear to be differentially activated during hypnosis (Rainville *et al.*, 1997, 2001, 2003; see also Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume). Second, there is a strong clinical research literature supporting the notion that with suggestion hypnotized patients can experience a wide range of affective experience from emotional numbing to intense rage, and that this quality of hypnosis can be used therapeutically to impact problematic cognition, behavior, visceral sensation, histamine release and even skin reactions (Wickramasekera *et al.*, 1996; Bryant and Kourch, 2001; Garvin *et al.*, 2001; Zachariae *et al.*, 2001; Bryant and Mallard, 2002; Houghton *et al.*, 2002).

Taken together, these findings strongly suggest that during the hypnotic state, the subject's experience of emotion is altered in a way that is consistent with the notion of topographic regression. This is not to say that just because an individual is hypnotized that he or she will be experiencing more emotion *per se*, but rather that a wider range of emotional engagement is available, and it is experienced more fully.

8.5.3. Fluctuations in body experience

The ego is considered first and foremost a body ego (Freud, 1923/1961). If hypnosis involves a topographic regression, then during hypnosis one would expect unusual fluctuations in how the body is experienced. There are few systematic, empirical investigations of such changes during hypnosis; however, there is a rich clinical

literature, as well as some suggestive evidence from studies on spontaneous ‘side effects’ of hypnosis. Gill and Brenman (1959) cited occurrences of hypnotized subjects spontaneously reporting feelings of shrinking, swelling or losing equilibrium, and Freundlich and Fisher (1974) found that depersonalization and body distortions were pronounced during hypnosis, and that the extent of distortion was positively correlated with hypnotic susceptibility. In studies of common unsuspected sequelae to hypnosis, distortions in body awareness were found even during routine experimental administration of standard hypnotic scales (Crawford *et al.*, 1982). More distortions were reported by highly hypnotizable subjects, and more negative transient experiences of a general nature were reported following individual (as opposed to group) administration. Four cases of apparently spontaneous depersonalization following termination of hypnosis have been reported (Hilgard *et al.*, 1961; Wineberg and Straker, 1973; Starker, 1974a,b; Haber *et al.*, 1979). Further, as emotional status and experience of body are clearly connected, many somatic experiences are saturated with hypnosis (Wickramasekera *et al.*, 1996; Garvin *et al.*, 2001; Zachariae *et al.*, 2001; Houghton *et al.*, 2002).

8.5.4. Displacement and condensation in the relationship with the hypnotist

Many theorists in addition to Freud have regarded hypnosis as a regressed relationship (Ferenczi, 1909; Kubie and Margolin, 1944; Gill and Brenman, 1959; Gruenewald, 1982). But this regression was almost universally viewed as temporal in nature. That is, theorists observed the compliance of hypnotic subjects to the ‘will’ of the hypnotist, likened it to the presumed blind obedience of a small child, and inferred that hypnosis must be a temporal regression to an infantile mode of relating to a parent. Although any involved parent of a 2-year-old will immediately question just how compliant a small child really is, the notion of hypnosis as essentially a transference phenomenon (in the temporal sense) was embraced by the psychoanalytic community. Forgotten was the fact that transference is an example of displacement and condensation—the

quintessential features of primary-process thinking and therefore of topographic regression, not of childhood cognition.

Two nonanalytic investigators have offered particularly thoughtful and measurable working definitions of transference during hypnosis; both, interestingly enough, have emphasized the topographically regressive features of hypnosis. Shor (1979) defined ‘archaic involvement’ with the hypnotist as ‘the extent to which there occurred a temporary displacement of “transference” onto the hypnotist of core personality emotive attitudes . . . most typically in regard to parents’ (p. 133). Sheehan (Sheehan and Dolby, 1979) suggested that ‘when transference is operable, the subject can be assumed to respond beyond the role demands of the hypnotic test situation as they are normally defined and to interact with the hypnotist in an especially motivated and personally meaningful way’ (p. 573). Although these definitions place a different emphasis on past versus contemporary components of a relationship, they have generated some interesting empirical work on transference and hypnosis.

Bitter (1975) defined transference as the semantic similarity between the hypnotist and the more similar parent (as measured by semantic differentials). He administered a semantic differential measure concerning the experimenter to 86 females both before and after hypnosis. When the results were compared with those of the same measure administered to 34 nonhypnotized control subjects at the beginning and end of the study they indicated that perceived similarity between hypnotist and either parent did not facilitate hypnotic response. Nor did the hypnotic procedure itself enhance perceived similarity between the hypnotist and either parent. Transference, at least as measured by semantic differentials, did not appear to be an important feature of hypnosis in this study.

In a carefully designed double-blind study, Frauman *et al.* (1984) examined subliminal activation of symbiotic fantasies as a way to help subjects experience more fully the archaic/positive aspects of the hypnotic relationship. Before hypnosis, the experimental group received subliminally presented symbiotic stimulation (‘Mommy and I are one’); a

control group received a neutral message ('People are walking'). Comparisons of subsequent hypnotic performance revealed that the experimental treatment did indeed result in increased ratings of rapport with the hypnotist. Subjects in the 'Mommy' group were also marginally more responsive to hypnosis than were controls, indicating the importance of relationship factors in hypnosis.

Sheehan (1971*a,b*, 1980, 1991; Sheehan and Dolby, 1979) examined the extent to which good hypnotic subjects evidence an especially motivated interaction with the hypnotist, along with increased involvement in the experience of suggested events. Using appropriate imagination, task motivation and simulating control groups, Sheehan found that hypnotic subjects characteristically participated more personally in hypnotic dream experiences than did control subjects. Hypnotized subjects more often reported dreams (manifest content) in which they perceived the hypnotist in a positive light and spontaneously expressed feeling protected, cared for and supported. This special commitment superseded demand characteristics and was sensitive to manipulations for reducing rapport. Sheehan interpreted these findings less in terms of analytic theory and more in terms of a special 'motivated cognitive commitment' to the hypnotist and the hypnotic task. Either way, Sheehan's research suggests the importance of relationship factors in hypnosis and offers new ways to investigate an often elusive phenomenon.

A colleague and I operationalized Shor's construct of archaic involvement by adapting 20 of his phenomenological descriptions of the subject's experience of the hypnotist (Nash and Spinler, 1989). Each of these items was transformed into a self-rated Likert-type scale, yielding a 20-item scale to be administered following hypnosis. There was a significant positive correlation between hypnotizability scores and this measure ($r = 0.52$). Factor analysis suggested three clusters of variables relevant to archaic involvement and hypnotic response: (1) perceived power of the hypnotist; (2) positive emotional bond to the hypnotist; and (3) fear of negative appraisal. All three factors correlated significantly with hypnotic susceptibility. We named this measure: the Archaic Involvement Scale (AIM).

Since then, seven studies have used the AIM to examine how subjects experience the person administering the hypnotic procedure. Lynn *et al.* (1988) found that highly hypnotizable subjects scored higher than low hypnotizables on the AIM. This was replicated twice and extended to both direct and indirect hypnotic induction protocols (Weekes and Lynn, 1990; Lynn *et al.*, 1991). Interestingly, only low hypnotizables were responsive to experimental manipulations of the relationship's emotional valence. Banyai (1991) then reported on another replication, this one with individually administered hypnotic protocols, administered over a period of several sessions. She found highly hypnotizable subjects scored higher on the AIM than did lows. Varga *et al.* (2007) reported similar findings in a very intensive study of the relational properties of hypnotic sex change. Two studies in my laboratory found: (1) higher AIM scores among high hypnotizables than for low hypnotizables during a computer-administered and interactive hypnotic procedure (Grant and Nash, 1995); and (2) elevated AIM scores among highly hypnotizable deaf subjects administered a videotape protocol in sign language (Repka and Nash, 1995). Taken together, these studies suggest that individuals who are highly responsive to hypnosis also experience the relationship differently from individuals who are less responsive. High hypnotizables are more likely to believe the hypnotist is powerful, they imagine a strong emotional bond with the hypnotist, and they fear displeasing the hypnotist.

8.5.5. A disruption in the experience of self

Tellegen's definitional requirement (1978–1979) that the hypnotically suggested enactment or behavior be 'experienced as real' (p. 220) *de facto* requires that the hypnotic subject does not experience the self as the origin of the effect. Woody and Sadler (Chapter 4, this volume) rightly note that 'this change in the experience of volition accompanies virtually all true hypnotic phenomena; hence, any good theory of hypnosis ought to explain its origin' (p. 90). Weitzenhoffer (1980) called this alteration in the experience of agency the 'classic suggestion effect'. Bowers and Davidson (1991, and elsewhere) endorsed this

notion and added a provocative twist: 'In a sense hypnotic behavior is purposeful behavior that is not on purpose' (personal communication, 1991; see also Bowers and Davidson, 1991, p. 128).

Theorists explain the 'it happened by itself' phenomenon in different ways, which have different implications: for Hilgard (1992) and Kihlstrom (1992), hypnosis involves loosening the connection between control and awareness. There is effort, but it is dissociated from awareness. The effort is 'hidden,' and hence the response seems to happen by itself. In contrast, Bowers and Davidson (1991) take the position that hypnosis involves a loosening of the connection between control and response because hypnosis directly accesses lower cognitive subsystems, hence bypassing higher executive function. Effortful control is not hidden, it is actually bypassed. Woody and Sadler (Chapter 4, this volume) integrate these process into one model. Spanos and Coe (1992) understand reports of nonvolition to be the product of compliance-induced report biases, and alterations in attentional focus. Lynn (1997) offers similar social explanations/attentional explanations (see also Barnier *et al.*, Chapter 6, this volume).

A psychoanalytic formulation of hypnosis based on the notion of topographic regression construes the hypnotic alteration of agency as a specific instance of the more general shift to primary-process forms of mentation during the hypnosis state. I have already noted that hypnosis engenders a regression in the experience of the 'other', rendering the hypnotic subject prone to primitive, affect-laden displacement especially in relation to the person of the hypnotist. Something similar can be said about the effect of hypnosis on the subject's experience of self and agency. As noted earlier, dreaming is the purest form of primary mentation accessible to most individuals. If the hypnotic state involves a shift toward primary-process mentation, then it should be no surprise that both hypnotized individuals and dreamers report their experience as visitations, not as something they create. There is no requirement that this experience be complete. Some hypnotic subjects report a dual experience of self (e.g. hidden observer, duality, trance logic; Orne, 1959; Nogrady *et al.*, 1983; Laurence *et al.*, 1986) as do some dreamers (e.g. lucid dream; LaBerge, 1985, 2000).

Research findings on the five points discussed above are summarized as follows. Some aspects of hypnotic response seem to reflect a form of mentation fully consistent with the notion of topographic regression. When compared with control conditions, hypnosis is generally more likely to: (1) elicit more imagistic, primary-process material; (2) support immediacy in the experience of affect; (3) involve fluctuations in experience of the body; (4) engender displacement of core attitudes about important others onto the hypnotist; and (5) support a regressive shift in the experience of volition such that suggested enactments and experiences are experienced as happening by themselves.

There is nothing in the psychoanalytic approach to hypnosis that contradicts the operation of social, dissociative and cognitive factors in the determination of hypnotic behavior and experience. Social factors would appear to be as operable among hypnotized individuals as they are among healthy and unhealthy people who are not hypnotized. Further, this psychoanalytic formulation labors in a well-articulated tradition of contemporary theorists who take hypnosis to be 'a state of (sometimes) profound cognitive change', involving cognitive, emotional, behavioral and physiological responses (Kihlstrom, 1998, p. 474). This interactionist tradition is robust and well-represented in most of the theory chapters of this book. All of these theorists posit a dysregulation or disruption in cognitive functioning during hypnosis. Though they differ about the nature of the disruption, all theories pivot on the idea of executive control (Fodor, 1983). The psychoanalytic position is that whatever else might be cognitively or physiologically involved, the nature of the disruption in hypnosis is descriptively a move away from secondary and toward primary process mentation. As such, it involves a regressive shift in the experience of self, other and relationship. As clinicians we know that the nature and extent of these shifts inform how we conduct therapy: when we choose to interpret, confront, support or remain silent. Further, we know that many of our patients consult us with complaints about unbidden miseries that involve similarly regressive patterns. In a relatively seamless manner, this psychoanalytic theory of hypnosis translates immediately into matters of clinical

technique in treatment (see Baker and Nash, Chapter 16, this volume)

8.5.6. A final word on final cause

I permit myself a quick foray into the question: ‘Why would there be among human beings the capacity to flit in and out of a hypnotic state?’ This is a question that pertains to Aristotle’s final cause. The ultimate final causes of hypnosis concern the role that hypnotic ability played in the phylogeny of *Homo sapiens*. Peter Killeen and I (2003) speculated that individuals in the hypnotic state process information more holistically, with little effort and greater automaticity. They often experience their words, ideas and actions as visitations, as do many poets and writers while at work (Madigan and Elwood, 1982). The boundaries between self and other, outside and inside, event and fantasy, can be quite permeable. If the hypnotic state were a chronic condition, the individual would be profoundly compromised in his adaptation to the slings and arrows of reality. However, if mastery of the physical and social environment is enhanced by brief, but compellingly absorbing, forays into such a state, high hypnotizability might well improve fitness of the individual who possesses it, or at least of the society in which he lives. There is reason to believe that for some creative problem solving, sheer effort may be counter-productive (Barron and Harrington, 1981; Amabile, 1987; Hennessy and Amabile, 1988). Being receptive to freely rising playfulness and impulse might, on special occasions, enable an individual to solve a problem by temporarily setting aside orthodox wisdom.

In writing of why we ought to read good literature, Harold Bloom notes that change always arises out of the unexpected and that what we do when we read good literature is to ‘overhear ourselves’. Bloom (2001) believes that in so doing we:

Prepare (ourselves) for surprise and even get a kind of strength that welcomes and exploits the unexpected. My real challenge as a teacher is to move my students away from the passive state of surprise to an active one in which they can exploit the wonder of surprise and be able to surprise others (p. 68).

No doubt Bloom’s students varied in their ability to make that imaginative effort. Hypnotizability may be an attribute that, under the

right circumstances, renders the individual more likely to solve creatively, relate empathically and therefore communicate compellingly. These would be useful qualities for students of Bloom. Arguably they are likewise useful in the clinic, the nursery, the theater and the laboratory.

8.6. Conclusions

Perhaps Freud’s most fundamental discovery was to note the similarity in how information and emotion are processed during some pathological states, during dreams and when we discover ourselves absorbed in unbidden reflection or unguarded reverie. To some degree in all these states we are ‘visited by’ the unexpected—sometimes sweetly, sometimes quite alarmingly. Like Freud, I am locating hypnosis somewhere in this domain of human experience. I do so because the hypnotic state is in fact fairly characterized as a topographic regression: a shift in the interplay between emotion, cognition and the experience of self, relationship and soma. These are the shifts we observe in the clean and well-lit laboratories of our science. As importantly, these are also the shifts we encounter in the trenches of our therapeutic work with patients. Knowing that the hypnotic state constitutes a topographic realignment immediately informs the clinician about how to use hypnosis therapeutically (see Baker and Nash, Chapter 16, this volume). Hence provisionally framing hypnosis as a topographic regression has potential to support a productive discourse between laboratory and clinical practice, with laboratory findings more easily translated to practice, and with clinical observations more productively communicated to science.

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SECTION III

**Contemporary
research**

CHAPTER 9

Measuring and understanding individual differences in hypnotizability

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9.1. Introduction

One must seek the truth where it is, not where one would like it to be.

Abbé de Faria (1819, p. 322)

Contemporary theoretical debates about the nature of hypnosis are rooted in the behaviors and experiences of a few subjects who seem to respond in an intriguing, sometimes surprising way to a hypnotic induction. If it was not for these subjects, hypnosis would have faded from the clinical armamentarium and the research laboratory a long time ago. Understanding the highly hypnotizable subject's behaviors and experiences goes beyond the hypnotic domain. Phenomena demonstrated over the centuries by these subjects, whether or not they were hypnotized, have influenced theoretical approaches and have fueled many clinical controversies. Psychoanalysis is a prime example from the beginning of the twentieth century of such theoretical influence, and hypnotically elicited memories of early childhood

abuse, satanic rituals and even past lives are examples from the end of the twentieth century. These influences and controversies in large part arose from the interpretations placed on the unusual abilities of highly hypnotizable subjects.

As we will see in this chapter, the highly responsive individual was rapidly identified by most, whether they be magnetists in the eighteenth century, clinicians in the nineteenth century or experimenters in the twentieth century. This amazing continuity in the phenomenon of high hypnotizability across cultures and contexts points to the necessity for any contemporary model of hypnotic behavior and experience to account for these individual differences. Whether these differences are explained by socio-cognitive or neurophysiological processes or by a mixture of both is still to be demonstrated, but theories or models of hypnosis cannot ignore the highly hypnotizable subject.

The origins of the highly hypnotizable subject can be traced back at least to the earliest days of

animal magnetism. Still today they are the focus of many clinical and experimental anecdotes and systematized research (Perry, 2004). Who are these subjects?

9.2. Core concepts and questions: historical foundations

Like any domain of research, and hypnosis is certainly no exception, experimentation is most often theoretically driven. This is, of course, a positive feature of psychological research. But research on individual differences in hypnotizability has perhaps been overly theoretical and characterized by an ‘either–or’ approach. For example, researchers have sometimes searched for the best correlates of hypnotizability to support a favored theory, whereas other researchers have refuted or explained away these correlates consistent with their different, favored theory (Kihlstrom, 1997, 2003). Although some might claim that understanding can arise from controversy, there comes a time when a field has to move beyond designing experiments to substantiate a favored theory and instead test competing (or even complementary) theories via careful experimentation (Platt, 1964; Nadon *et al.*, 1991). Unfortunately, this approach remains a rare occurrence in our field (whether it be clinical or experimental). The good news, however, as the reader will have noticed in Section II of this book, is that most contemporary hypnosis theories strive to connect to current theorizing in broader domains of psychology. Through a rapid review of historical conceptions of hypnosis, we will provide examples of how the search for correlates of hypnotizability was too often restricted by theoretical beliefs. In fact, when, on occasions, someone suggested a different approach, it was typically ignored for a few generations.

9.2.1. Animal magnetism

The origins of contemporary hypnosis are usually traced back to the work of Mesmer, the Viennese physician who proposed in 1779 a new form of treatment that he called animal

magnetism. Animal magnetism became an anchor point for the transition between religious healing rituals, mostly seen at the end of the eighteenth century in the laicization of the exorcist rituals with Gassner, and a more scientific approach to medicine (Laurence and Perry, 1988). This was the period of the Enlightenment and, for Mesmer, this new therapeutic system was grounded in physiology. He proposed the existence of a universal fluid, with properties akin to mineral magnetism that pervaded the universe, but most importantly interacted with the human nervous system. The magnetic fluid stood firmly alongside other contemporary discoveries such as electricity and the different chemical elements. Even though Mesmer (1779) acknowledged that the mechanism of action was still unknown, the effects of the magnetic fluid, he believed, were mediated by a network of magnetic poles linked to the nervous system.

Mesmer never acknowledged the role of verbal and nonverbal suggestions as it would have contradicted his own theoretical system. He certainly was aware of the existence of suggestion, because only a few years earlier he had described Gassner’s exorcism procedures along these lines. However, he rejected the concept of suggestion when it came to animal magnetism and maintained until the end of his life the central role of the magnetic fluid. Given the implausibility of the existence of the magnetic fluid, we can certainly interpret Mesmer’s system as suggestive in nature, but that was not Mesmer’s understanding.

The practice of magnetism and the actual process of magnetization were also quite different from contemporary hypnotic methods. Magnetic passes—hand movements over the body—were the main ways of magnetizing. We can interpret these passes as indirect suggestions that were effective because of strong contextual demands. But again, that was not Mesmer’s thesis. He believed that these passes set the magnetic fluid in motion and removed any obstruction in the body that created illnesses. Mesmer reflected well the medical beliefs of his time: illnesses were usually caused by some sort of blockage in the body and required purgation, the almost unique medical treatment of the time. Laxatives, emetics and bleedings were the hallmarks of eighteenth-century medicine,

and Mesmer himself could not ignore them. All of his patients were administered laxatives as they entered his clinics! It was Mesmer's pupil, the Marquis de Puységur, who proposed what is still today the basic structure and process of a hypnotic intervention, the use of suggestion.

It is interesting to note that as early as 1775, Mesmer wrote about individual differences in response to the effects of the magnetic fluid. In the *Nouveau Mercure Savant d'Altona* (1775), he wrote:

I have noticed also that not all men can be equally magnetized: of ten persons that were present, there was one who could not be magnetized, who stopped the communication of magnetism. On the other hand, there was one of these ten persons who was so susceptible to magnetization that he could not approach a patient within ten feet without causing him tremendous pain (cited in Laurence and Perry, 1988, p. 59).

The hallmark of Mesmer's system was the convulsive crisis. The 'crise salutaire', as he labeled it, was a sure sign that the magnetic fluid was active. Although this particular set of behaviors could take many aspects, Mesmer, as well as many of his contemporaries, reported that a crisis occurred in about a quarter of all magnetized individuals (see Laurence and Perry, 1988, Chapter 3). It is certainly interesting to note that the percentages of responsive individuals reported are similar to those found today using contemporary hypnosis scales (e.g. see Woody and Barnier, Chapter 10, this volume).

More to the point was Mesmer's own definition of animal magnetism, which hinted at the existence of an individual difference in responsiveness to the effects of the magnetic fluid. Magnetism was usually viewed as a general curative system; Mesmer himself presented it as such. But he also used the term animal magnetism in a very different fashion. In his *Précis Historique*, Mesmer (1781) summarized in 27 propositions the basic tenets of his curative system. In two of them, he recognized that individuals vary in their responses to the magnetic fluid. He went as far as to define animal magnetism as 'the property of the animal body that renders it susceptible to the influence of the

celestial bodies and the reciprocal action of those who surround it'.¹

This is probably the closest Mesmer came to defining animal magnetism as an individual difference. He did, however, continuously downplay the notion of individual differences. For him, by paying attention to the few highly responsive subjects, physicians would forget the benefits that animal magnetism could bring to all patients. He certainly was correct in fearing the attraction that these highly responsive subjects would create. As we will see, de Puységur's 'sommambules' would transform the basic nature of animal magnetism.

9.2.2. Artificial somnambulism

If 1784 is remembered for the Benjamin Franklin Commission of Inquiry into Animal Magnetism, it is also the year when de Puységur discovered artificial somnambulism. If de Puységur remained at least publicly theoretically faithful to Mesmer and animal magnetism, his practice was completely different. Whereas Mesmer avoided the topic of individual differences in his lay writings, de Puységur fell 'head over heels' for the amazing abilities of his somnambules. We will not repeat here the story of Victor, de Puységur's most beloved somnambule, as it has been described in other books (see, for example Laurence and Perry, 1988; Gauld, 1992). Ironically, de Puységur fell prey to the demand characteristics of his experimentation with Victor in a manner similar to Charcot who, 100 years later, confused hypnotic behaviors with epileptic and hysteric ones. Whereas Mesmer attempted to convey a scientific status to animal magnetism, de Puységur brought magic back into it, reopening the door to the marvelous.

As Mesmer predicted, the alleged feats of de Puységur's somnambules overshadowed the general therapeutic effects of animal magnetism. De Puységur believed that once magnetized,

¹ In French, proposition number 10 reads: La propriété du corps animal qui le rend susceptible de l'influence des corps célestes et de l'action réciproque de ceux qui l'environnent, manifestée par son analogie avec l'aimant, m'a déterminé à la nommer *magnétisme animal*.

some of his patients (many of whom were his employees) were able to shut off pain, travel to the past, be amnesic, demonstrate unusual physical strength, diagnose themselves and others, prescribe the magnetic treatment to be applied and even predict the future (see Laurence and Perry, 1988). This led to dramatic consequences for animal magnetism. For years to come, the mere demonstration that the somnambules did not possess the magical abilities hypothesized by de Puységur and his followers was sufficient to dismiss any potential scientific and clinical interest in animal magnetism.²

However incorrect de Puységur was, he was the first to emphasize individual differences in magnetized patients. In 1784, he published a book describing in detail 61 cases treated by magnetism. Of these 61 patients, eight (13 percent) manifested somnambulistic behaviors.³ De Puységur's discovery was acclaimed by the partisans of animal magnetism, who saw in it a valid rebuttal to the reports of the different medical commissions that had recently dismissed Mesmer's theory of animal magnetism. But the Commissioners had not claimed that Mesmer's treatment was ineffective. Rather, they concluded that the magnetic fluid did not exist and, thus, could not be responsible for the effects observed at D'Eslon's clinic. They also noticed the variable effects of animal magnetism and suggested that imagination-based expectations, reflexive imitative tendency and the effects of the physical passes were responsible for the reported improvement in patients' health (see *International Journal of Clinical and Experimental Hypnosis*, October 2002 issue on the Benjamin Franklin Commission of Inquiry). This conclusion foreshadowed the twentieth-century interest in identifying social-cognitive correlates of hypnotizability.

² It did have other consequences that we will not describe in any detail. The rise of the somnambule allowed for the development of both spiritualist and spiritist movements that are still alive and well today.

³ As was noted by Laurence and Perry (1988), this figure appears to be the first published on the distribution of somnambulistic abilities. As mentioned earlier, Mesmer had written that about one in 10 individuals possessed good magnetic responsiveness, but he had not presented any data.

Following in the steps of the Franklin Commission, only one author of this period took on the challenge of identifying the processes at play in the somnambules. According to the Abbé de Faria (1819), individuals were born with certain abilities that rendered them responsive to suggestion whether they were magnetized or not. Faria described a few of these abilities: abstraction of the senses or the ability to relegate to the periphery of attention internal and external sensory information; psychic impressionability or the ability to set aside critical thinking to let the suggestion travel its course; and a tendency to misattribute the effects elicited by suggestions to the magnetizer. The effects produced by specific suggestions facilitated the responsiveness of the subject (a sort of conditioning or response expectancy). For Faria, this misattribution process was at the origin of reports of nonvolition, a crucial component of the magnetic response. As he wrote in his book:

Is it not paradoxical to say that we influence our own actions, and that we are not aware of our own influence? (p. 45).

Faria described the first examples of the different suggestions used in laboratories today, which would become the hallmarks of the highly hypnotizable subject: catalepsy, paralysis, visual, auditory and taste hallucinations, analgesia, amnesia, dual personality, etc. Faria claimed that he had elicited magnetic sleep in more than 5,000 subjects; only one in five or six, however, were able to display the behaviors and experiences of the somnambule. Faria's reflections unfortunately were like a voice in the desert. Although his emphasis on the role of suggestion would be noticed by Liébeault and Bernheim 60 years later, individual differences would only be re-explored in the twentieth century.

If the theoretical systems associated with animal magnetism varied, the number of highly responsive subjects did not. For a while, with the Marquis de Puységur, they became the center of attention, and the potential general benefit of magnetism was relegated to a secondary place, as predicted by Mesmer (albeit retrospectively in his 1799 book). This first period in the history of hypnosis illustrates well how, even from the beginning, practitioners continuously described and referred to a general state of magnetism

while recognizing at the same time that only a small proportion of their patients illustrated the more spectacular aspects of the alleged state.

Faria is probably the only early author who attempted to explain that all could benefit from the magnetic sleep as long as what was asked of them was proportional to their abilities; again a quite contemporary view consistent with that of many modern clinical hypnotists. However, Faria did not claim that they were magnetized. Rather, he argued that the magnetist could manipulate expectations and attitudes while the patient experienced the benefit of relaxation and calmness of mind that the magnetic sleep—or lucid sleep—brought. A quite lucid Abbé! We will return to this point again as we argue that not all individuals who receive a hypnotic induction are necessarily hypnotized and that the effects of the context of hypnosis often need to be distinguished from the effects due to hypnotizability.

9.2.3. Hypnotism

The clinical practice of magnetism found its niche within the European medical establishment in the nineteenth century. Although from time to time a clinical book was published, it was another 20 years before Braid (1843) in England proposed a new way to look at the phenomena elicited by the practice of animal magnetism. Braid, however, did not pay special attention to hypnotizability. As for his predecessors, hypnotism (the new label) was still a peculiar state of mind that varied on a continuum (of depth, not of the individual's ability to experience it). The more the state deepened the more complex the observed phenomena became. For instance, Braid made amnesia one discriminating factor between the different stages of hypnotism. He did notice that subjects' responses varied and that only about 10 percent of his patients could reach the deepest stage that he labeled 'hypnotic coma'. Braid experimented with anesthetics, hyperesthesias, hallucinations, paralyses, suggestions of theft and other criminal acts, self-hypnosis and even duplication of consciousness. Braid believed that direct verbal suggestions were the best way to induce hypnosis. Any physical means of inducing hypnosis were seen as indirect suggestions that the subject had learned

Table 9.1 Hypnotizability distribution reported by Schrenck-Notzing (1892) from 'First International Statistics of Susceptibility to Hypnosis'

| Hypnotizability | Cases | Percentage |
|-----------------|-------|------------|
| Refractory | 519 | 5.9 |
| Somnolence | 2557 | 29.4 |
| Hypotaxis | 4316 | 49.6 |
| Somnambulism | 1313 | 15.1 |

to interpret as an induction; a point that Charcot and La Salpêtrière School should have remembered 30 years later.

In the same way that the somnambule captured the attention of de Puységur in the late eighteenth century, the highly hypnotizable patient would capture the attention of clinicians in the late nineteenth century. At this time, there was a new enthusiasm for experimentation. Psychological research was starting to gain credibility, and hypnosis attracted a number of well-known physicians, one of whom was Charcot, the famous neurologist. Before discussing the fate of the highly hypnotizable subject at the end of the nineteenth century, it is useful to remember that most clinicians who practiced hypnosis reported the differential levels of responses they obtained with their patients. In 1892, Schrenck-Notzing published the results of the 'First International Statistics of Susceptibility to Hypnosis'. Fifteen observers in different countries sent in their results. For the 8705 individuals who were hypnotized by these clinicians, hypnotizability was distributed as seen in Table 9.1.⁴ Liébeault (1889) had already published some statistics from his practice. In 1887 and 1888, he collated 913 cases of his own, with results as seen in Table 9.2

Although it would be too tedious to go through all the different classifications that were proposed at the end of the nineteenth century,

⁴ More complete statistics can be found in Bramwell (1921) Chapter 4 or in Schrenck-Notzing (1892). A summary of some of these early statistics can be found in Hilgard (1965).

Table 9.2 Hypnotizability distribution reported by Liébeault (1889)

| Hypnotizability | Cases | Percentage |
|---------------------|-------|------------|
| Uninfluenced | 37 | 4.1 |
| Somnolence | 62 | 6.8 |
| Light sleep | 148 | 16.2 |
| Profound sleep | 343 | 37.6 |
| Very profound sleep | 80 | 8.7 |
| Somnambulism | 243 | 26.6 |

these statistics highlight once again that more than 70 percent of patients could not attain the level of somnambulism. All practitioners and researchers alike continued to view hypnosis as a state that could be induced more or less successfully in their patients. Although few, if any, considered the ability to undergo hypnosis to be an individual difference worthy of investigation, some, like Liébeault, noticed that highly responsive subjects seemed to possess the ability to produce vivid images in their natural state (1866, pp. 104–105). As Binet and Féré (1888) would write later: ‘subjects of experiments in hallucination are, in the waking state, endowed with a special power of representing objects in a sensible form’ (p. 221). They believed, however, that this ability was not linked to hypnotizability, but rather to the ability to produce hallucinations in hypnosis. Liébeault also, as his own statistics indicated, believed that few could ever attain somnambulism. As he wrote:

I am convinced that with sufficient practice, everyone could sleep at any time and at will. For most people however, the sleep produced would most of the time be light (1866, p. 298, free translation).

The late nineteenth century is often remembered as the ‘Golden Years’ of hypnosis; a near 20 years of intense scientific and theoretical discussion of hypnotic phenomena between two major schools of thought, La Salpêtrière under the leadership of Charcot, and Nancy under the leadership of Bernheim (see Laurence and Perry, 1988; Gauld, 1992). Both schools agreed on the physiological basis of the state produced by the induction of hypnosis, but they differed in their theoretical interpretation of that physiological state.

For the first time, hypnotic responses were conceptualized in pathological terms. Whereas Mesmer had eradicated religion from the phenomena of animal magnetism and proposed that magnetic responses were natural rather than diabolical, Charcot introduced the notion that hypnosis was a pathological state, a form of latent hysteria. On 13 January 1882, Charcot read his first paper on hypnosis to the Académie des Sciences. He had ‘successfully’ systematized various hypnotic phenomena into three major classes or stages: catalepsy, lethargy and somnambulism. Each stage had its inherent characteristics and could be observed only in hysterical patients or patients who exhibited latent hysterical symptoms. The three stages could appear in any order depending on the type of induction used. Charcot’s original classification was extended upon by his followers who soon realized that there seemed to be more exceptions than rules. Pierre Janet for example (1886; cited in Morand, 1889) described nine stages representing different alliances between the three basic ones: catalepsy, lethargic catalepsy, somnambulistic catalepsy, lethargy, cataleptic lethargy, somnambulistic lethargy, somnambulism, cataleptic somnambulism and lethargic somnambulism!

Charcot maintained his tri-partite division of the hypnotic state, even though some adversaries pointed out that his observations were flawed from the beginning. In 1888, Bernheim published a short paper explaining that there were eight differences between the two schools of thought. Among these, there was recognition that Charcot’s three basic stages and their characteristics were the results of suggestions (whether direct, indirect, verbal or nonverbal). Bernheim (1886) rejected Charcot’s hysterical model and summarized in one quick sentence his opinion of Charcotian hypnosis:

Only once have I seen a subject who could demonstrate perfectly the three stages: lethargic, cataleptic, and somnambulistic. It was a young woman who had spent three years at ... La Salpêtrière. ... She was not a naturally hypnotized subject, any more; it was a real suggested hypnotic neurosis (p. 95).

Such a barbed dismissal would be echoed a few years later by Pierre Janet who would note that subjects would always demonstrate in

hypnosis the beliefs of the one who had hypnotized them (Perry and Laurence, 1984).

Bernheim's view of hypnosis was also physiological, but he focused on suggestion as the main mechanism of action. Hypnosis was a natural state that fluctuated according to the individual. Individual differences in responses were well documented in the historical literature even though no satisfactory empirical explanation had been proposed to understand them. For Bernheim, suggestions were the origin of all phenomena seen in hypnosis, from the simplest to the most complex. He proposed a classification of hypnotic responses based on the types of suggestions enacted by the subject. Hypnotizability was thus a continuum; more hypnotizable subjects succeeded in responding to more complex suggestions. The highly hypnotizable subject was able to demonstrate amnesia, hallucinations and many different post-hypnotic behaviors. Bernheim's classification was to serve as the basis of the elaboration of the contemporary scales of hypnotizability, such as the Stanford scales and the Harvard Group Scale of Hypnotic Susceptibility (see Woody and Barnier, Chapter 10, this volume). Even though it appears that the establishment of such scales would beg the question about the factors linked to high responsivity, none of the nineteenth-century researchers seemed interested in proposing answers, in fact in even raising the issue. For most of these researchers, hypnosis was a state and thus an indivisible entity. In a similar way, some people are light sleepers, others are deep ones. A sentence written by Liébeault in 1887 in the *Revue de l'Hypnotisme* is quite revealing of this belief (reprinted in Liébeault, 1889, p. 293). After having described his classifications of the stages found in the hypnotic state he wrote:

With this classification, it is not our intent to fractionate a state that is indivisible; we only wanted to propose some markers, some tags along the series of phenomena seen in this state; we wanted to mark the stages since they become more complex as the state becomes deeper (p. 199).

Like Liébeault, those who were fascinated by the most highly hypnotizable individuals were mostly interested in the amazing things they could do, and less so in what individual characteristics led to these abilities.

9.3. Foundation research: contemporary measures of hypnotizability⁵

When the fascination with hypnotic phenomena traveled from Europe to North America, it triggered interest both as a social phenomenon quite often embedded in spiritualistic/religious mumbo-jumbo and as a scientific puzzle.⁶ Many well-known American thinkers started publishing their ideas about hypnosis. It would have to wait until Clark Hull, however, for a first systematic, scientific attempt to understand hypnosis (Hull, 1933). Even if Hull's attempt was short-lived, it was the forerunner of the development of standardized measures for hypnosis and hypnotic responses. When Weitzenhoffer and Hilgard (1959, 1962) published their first scales of hypnotizability, it signaled the beginnings of the scientific investigation of hypnosis. These scales operationalized the domain of hypnosis and became a standard denominator for its investigation. Whether or not the scales were challenged, modified or new scales created, their basic structure remained essentially the same (Barnier and McConkey, 2004) and their importance can hardly be disputed.⁷

Although we will not discuss hypnotizability scales in detail (for full discussion, see Woody and Barnier, Chapter 10, this volume; or see Barnier and McConkey, 2004; Woody *et al.*, 2005), we ask the reader to keep a number of points in mind as we consider the different correlates of hypnotizability. First and foremost, the scales are not in

⁵ Following in the footsteps of Barnier and McConkey (2004, p. 32), as difficult as that may be, we use the term hypnotizability to refer to an individual's response to test suggestions after a formal induction procedure.

⁶ A dualistic karma, still very much alive at the beginning of the twenty-first century as seen in the legal debate between Darwinian evolution and creationism/intelligent design, that the American people seem reluctant to resolve.

⁷ We would like to attract the attention of the reader, however, to an important caveat to this affirmation. Barnier and McConkey (2004, p. 35) provide the reader with a table reporting the current use of hypnotizability measures in empirical investigations. Over 90 percent of laboratory research has made use of one of the current scales, whereas less than 10 percent of clinical research has used them. Maybe someone is not getting the message . . .

any way perfect, as exemplified by their fluctuating pattern of inter-correlations (see, for example, Perry *et al.*, 1992). The most commonly used scale, the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A), correlates only about 0.60 with the more difficult scales. If an experimenter wants to identify a specific ability of a highly hypnotizable individual and only uses the Harvard scale, chances are he or she will not find anything because this scale does not necessarily identify the best subjects. Second, the diverse scales reflect the theoretical orientations of their creators. So when assessing the results of studies investigating social, cognitive or emotional correlates of hypnotizability, it is important to look closely at which particular scale was used. For example, use of the Carlton University Responsiveness to Suggestion Scale (CURSS; Spanos *et al.*, 1983), which shows a strong inverted J distribution (i.e. a majority of subjects score in the lower range of the scale), to assess the role of expectations (Kirsch, 1991) may lead to a different pattern of responses than use of the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer and Hilgard, 1962), which is characterized by a bimodal distribution.

As Woody *et al.* (2005) recently demonstrated using sophisticated statistical analysis (see also Woody and Barnier, Chapter 10, this volume), the scales may be best understood as measuring both a general factor of hypnotizability as well as secondary factors, which involve specific abilities linked to a response set on specific items of different difficulty indices. This suggests that we should not only look for correlates of the general factor, but also correlates of those different sets of abilities that complete the picture of hypnotizability. For example, Labelle *et al.* (1989) reported that highly hypnotizable subjects who scored high on both an absorption scale and an imagery scale were more likely to incorporate a false memory suggestion than subjects who scored high on only one of these two scales. We will return to this issue later when we emphasize that most current correlates may not be the best way to understand the processes that subsume hypnotizability, especially since highly hypnotizable subjects may be more heterogeneous in their responses than their less responsive counterparts (Laurence *et al.*, 1986; McConkey, 2005).

Before we leave the subject of hypnotizability scales, one topic must be addressed in more depth because it represents an interesting challenge to traditional conceptions of hypnotizability, as well as perhaps a different way to investigate correlates. Is hypnotizability modifiable? Or, can we finally eliminate the need to look for individual correlates by making everybody highly hypnotizable?

9.3.1. Modifying hypnotizability

Up to now, attempts to modify hypnotizability have generated mixed results (for a review, see Barnier and McConkey, 2004). It is interesting to note that most, if not all, of the more spectacular results have been reported by researchers who put forward a social-psychological view of hypnosis (most of these studies originating from either Nick Spanos's laboratory or the laboratories of his students), whereas more ambiguous results have been reported by researchers who view hypnotizability as a stable state/trait-like ability (see, for example, Gorassini, 2004); for once an obvious context effect! Another way of looking at these results, however, has been suggested by Woody (1997). If one considers hypnotizability as a latent construct, then it cannot, or at least should not, be modifiable. If, on the other hand, hypnotizability is seen as an emergent construct, then the story is quite different and any manipulation may modify its expression. The notion of an emergent construct could be akin to a synergistic effect, a point of view that we proposed a few years ago (Nadon *et al.*, 1991) based on the exploration of more complex relationships between correlates. The modifiability research can be seen, in part, as the struggle between these two points of view: latent construct versus emergent construct.

The belief that hypnotizability is modifiable to a large degree comes mainly from nonstate theorists who argue that social and cognitive processes are the main factors mediating the ability to be hypnotized. According to this view, through training, large gains in susceptibility can be produced by teaching subjects to adopt congruent attitudes, skills and interpretations that enable them to enact, as well as to experience, subjective responses called for by

the hypnotic context. In contrast, state/trait theorists contend that susceptibility is not so malleable. According to their view, hypnotizability is largely governed by a trait-like aptitude, and only small gains can be observed through the modification of social and cognitive factors. Hypnotizability has been conceived of as a trait, rather than a learned ability, in part because of the high test–retest reliability of hypnotizability scores (using the same or a different hypnotist; e.g. 0.71 in a study by Piccione *et al.*, 1989), and the high correlation across different hypnotizability scales, induction procedures and item contents (Perry, 1977, Perry *et al.*, 1992). Nonstate theorists have explained these correlations by commenting that participants in these studies are rarely exposed to information that changes their attitudes and interpretations of the hypnotic experience, which accounts for the stability of hypnotizability over long periods of time.

Early attempts to modify hypnotizability yielded mixed results and were conceptualized as ways to change the ‘depth’ or the supposed ‘trance state’ of an individual (Spanos, 1986). The first generation of experiments used simple training programs and can be traced all the way back to Faria (1819), who believed that hypnotic susceptibility was correlated to the thinness of blood. By extracting large quantities of blood and re-hypnotizing his participants, Faria found that he could increase their level of responses (Laurence and Perry, 1988). Pre–post test score increases in hypnotizability were also found in several sensory deprivation studies (Sanders and Reyher, 1969; Barabasz and Barabasz, 1989), but the increases did not last very long. Although other techniques were effective, such as mutual hypnosis (Tart, 1967), alpha biofeedback training (London *et al.*, 1974) and muscle relaxation biofeedback training (Wickramesekera, 1973), they were hard to replicate (Spanos, 1986). Diamond (1977) criticized the small effects found in these studies, and argued that they reflected the failure to foster effective cognitive strategies or even change hypnosis-specific attitudes and expectations.

In the last 20 years, Spanos (1986), building on earlier work by Diamond (1977), developed the Carleton Skills Training Program (CSTP), which

he based on social-learning theory. According to Spanos (1986), active strategy induction procedures can stimulate substantial immediate gains in objective and subjective hypnotizability scores. The CSTP program is a 75 min procedure that is designed to enhance motivation and teach what could probably be described as a micro-management approach to hypnotic suggestions. The CSTP consists of four parts (Spanos, 1986).

1. An introductory talk explaining that hypnosis is a learnable skill and promoting a positive attitude towards it.
2. Explicit instructions on how to respond hypnotically by stressing the need to enact each suggestion and by vividly imagining each suggestion.
3. Viewing a videotape of a model responding hypnotically.
4. Practicing using these strategies.

The success of the CSTP is believed to be mediated through an amalgamation of potentially modifiable attitudes, beliefs, expectations, imaginative skills and the compliance to enact these skills in the proper context. ‘Heated’ acting is an appropriate metaphor to represent how participants are asked to learn and correctly respond to hypnotic suggestions with the CSTP (Sarbin and Coe, 1972). Participants learn that hypnotic responding is an active process that involves creating suggested effects rather than a passive process in which they wait for the suggested effect to happen automatically (Spanos, 1986). The CSTP thus provides subjects with active strategies that are presented as acceptable to achieve suggested effects (Gorassini and Perlini, 1988; Gorassini *et al.*, 1991; Gearan *et al.*, 1995). For this reason, state theorists have argued that post-training gains do not reflect an enduring enhancement of hypnotizability but are artifacts engendered by demand characteristics, social pressures and expectancies for compliance (Bates, 1990).

There is a general consensus that cognitive skill training, like the CSTP, engenders a statistically significant effect on pre–post test scores (for a review, see Gorassini, 2004). However, the size of the effect is not as impressive as one might assume. An average score for trained highs in most studies that use the CURSS as the hypnotizability scale will typically find post-training

means between 5 and 6 on this 7-point scale. The CURSS contains two ideomotor items (raising the arm, arms moving apart), two challenges (arm rigidity, arm immobility) and three cognitive tasks (auditory hallucination, visual hallucination, amnesia). Therefore, a high in these studies will be someone who can pass ideomotor and challenge items, but not necessarily respond to the more difficult cognitive items. As Woody *et al.* (2005) proposed recently, ideomotor and challenge items can easily be coached through social-cognitive learning, but to pass the more difficult cognitive-perceptual challenges, such as visual hallucination and amnesia, the individual needs specific hypnotic abilities.

This is not an unreasonable comment when we know already that only approximately 50 percent of lows can be successfully trained into highs (Gorassini and Spanos, 1986; Spanos *et al.*, 1986, 1987; Gfeller *et al.*, 1987). Spanos and McPeake (1975) found that absorption in imaginings correlated significantly with susceptibility and predicted post-test susceptibility scores. Similarly, Gearan *et al.* (1995) found that behavioral and subjective responses to hypnotic suggestions were correlated with an increased use of fantasy. Therefore, skills in imagery and absorption are necessary for being successfully trained to become a highly hypnotizable person. Spanos *et al.* (1987) found that positive attitudes towards hypnosis were also a necessary ingredient. Subjects who displayed good imaginal abilities prior to hypnosis and positive attitudes towards hypnosis did better than those who still held negative attitudes after training. It seemed as though negative attitudes or negative information towards hypnosis suppressed a potential increase in hypnotizability by preventing subjects from exercising their inherent talent (Spanos and Flynn, 1989).

To understand better the effects of demand characteristics, social pressures and expectancies, a series of studies have looked at the differences between natural highs, trained highs and simulators. The results of these studies show that modern techniques that evaluate hypnotic susceptibility are unable to distinguish a natural high from a trained high. Simulators, on the other hand, tend to role-play in an exaggerated manner compared with

the usual experiences reported by natural highs. Spanos and Flynn (1989) used two different types of simulators. One group was asked to simulate hypnotic responses as though they were highs, while another group was asked to simulate hypnotic responses as though they were lows turned into highs. Both groups were distinguishable from natural highs and from CSTP subjects (trained highs). Simulators were also less likely than natural or trained highs to experience duality, incongruous writing during age regression, and transparent hallucinations. Spanos *et al.* (1996) replicated Kirsh *et al.* (1989) in showing that natural highs and trained highs are different from simulators by comparing hypnotic responses in the presence of an experimenter and while alone. Natural and trained highs showed high levels of hypnotic responses in the presence of an experimenter as well as alone. However, simulators exhibited high levels of hypnotic responses only when the experimenter was present. When simulators were alone, they exhibited role-inappropriate behaviors such as picking their nose and eating. Skill-trained participants (trained highs) were indistinguishable from natural highs in both conditions. Therefore, it seems as though the trained highs act out and report subjective experiences similar to those of natural highs, and both are distinguishable from simulators.

If trained highs are closer to natural highs than simulators, what are then the key components that make the CSTP an effective training tool? We have already seen that fostering positive attitudes by de-mystifying hypnosis is a necessary component for participants. Gfeller *et al.* (1987) investigated the effects of rapport on susceptibility training and compared low interpersonal training with high interpersonal training. In the low interpersonal condition, training was conducted in a less personal and spontaneous manner, and interpersonal rapport was minimized compared with the high interpersonal condition. Post-test scores indicated that whereas only 25 percent of the initially low susceptibles in the low interpersonal training condition scored as highs, 50 percent of the initially low susceptibles in the high interpersonal training condition scored as highs. Gorassini and Spanos (1986) created four groups to evaluate

which component of the CSTP had the most effect. Group 1 received the full CSTP; group 2 received the CSTP without the video of the model responding successfully to the suggestions; group 3 practiced suggestions but did not receive any modification information or modeling; and group 4 was a standard control group. As Gorassini and Spanos predicted, the full CSTP had the greatest treatment effect; notably, this effect decreased as elements of the CSTP were taken out. There was no statistically significant difference between group 3, who practiced suggestions alone, and group 4, the control group. Gearan *et al.* (1995) investigated elements of the CSTP that may engender compliant behavior. The full CSTP was compared with a modified training program in which all physical enactment was omitted. Although both the full and the modified conditions increased behavioral and subjective responses to hypnotic suggestions, subjects in the modified condition reported increases in fantasy but without voluntary physical enactment. Increases in susceptibility were correlated with imagery, while increases in enactment were only correlated with compliance. Gearan *et al.* (1995) concluded that the modified training program is a more appropriate means to enhance suggestibility without engendering compliance. However, compliance seems to be a necessary component, as trained highs had higher compliance scores than untrained highs in both the full and modified CSTP conditions. To conclude, it seems that strategies that foster a subject's imagery and absorption skills, while also cultivating effective rapport, are the most important elements in the CSTP. Knowing that good absorption and imagery abilities are often found in low hypnotizables, a context that encourages their activation and justifies voluntary enactment of hypnotic behaviors may produce 'deep simulation' in some low hypnotizables, as noted by Gorassini (2004). Whether one looks at it as 'deep simulation' or 'heated' acting, trained highs certainly behave in ways very similar to natural highs. However, these training programs manipulate so many aspects of the experience that it remains difficult to disentangle a compliant from a natural response. If a subject is shown what to do and what to say, and is told that it is acceptable to follow these instructions,

how then can we ever differentiate training from nontraining? Sometimes it may appear there is no way out of the context effect even for contextualists!⁸

Being able to modify hypnotizability can only be seen as a worthy endeavor. Since there is more and more good evidence that hypnotizability may play an important role in the alleviation of distressing clinical problems (e.g. Council and Barnier, in press), hypnotic techniques and skills to cope with these problems would be a welcomed tool in the clinician armamentarium. Experimentally, trained highs may be extremely helpful in identifying the cognitive, emotional and physiological correlates of natural highs. It would be extremely useful for future research to contrast trained highs with natural highs outside of the hypnotic context (where trained highs, for example, would not be reminded of their training) and to compare their performance on attentional, memory or emotional tasks unrelated to hypnosis. Showing similar patterns of responses in different contexts would certainly address the compliance argument in a very persuasive way. The demonstration of modifiability challenges some of the enduring theorizing about hypnotic behaviors and experiences, and highlights the importance of understanding the correlates of hypnotizability.

9.3.2. Cognitive correlates of hypnotizability

Stemming quite naturally from the theorizing of the nineteenth century, the first attempt to identify those subjects who responded magnificently to a hypnotic induction led to the investigation of personality correlates. After all, there was a belief that hypnotically responsive individuals (read women) were hysteria-prone. What a disappointment it must have been to some people to realize that what seemed so theoretically

⁸ Some researchers have raised the issue of faking in those newly created highs (see Bates, 1990). However, Gearan *et al.* (1995) and Burgess *et al.* (1990–91) reported that natural highs also sometimes fake their responses. To ask trained highs if they fake or not is a moot point. If what is considered faking (or simulation) is redefined as training, then it is quite surprising that some trained highs would still describe their hypnotic responses as faked.

obvious, turned out not to be the case! No matter what measures of personality have been used, whether in the late nineteenth century, the early or mid twentieth century, or the late twentieth or early twenty-first century, no personality types or styles have been found yet to describe the highly hypnotizable subject reliably. That, of course, did not stop some people from theorizing about it (see, for example, Gill and Brenman, 1959). Since the 1940s, numerous studies have investigated the relationship between hypnotizability and personality dimensions or characteristics, such as those from the Minnesota Multiphasic Personality Inventory, the Big Five Inventory or the Eyzek Personality Questionnaire (Barber, 1964; Parker, 1995; Lyons and Crawford, 1997; Nordenstrom *et al.*, 2002; Silva *et al.*, 2005). Although these research efforts initially gave rise to promising data, many studies produced negative results. Overall, none of these dimensions showed robust and consistent correlations with measures of hypnotizability. These results paralleled the conclusions of older literature reviews (Deckert and West, 1963; Barber, 1964; Hilgard, 1967): the influence of traditional personality variables on hypnotizability is, at best, minimal.

9.3.3. Absorption

When Tellegen and Atkinson (1974) systematized in a single questionnaire what highly hypnotizable subjects appear to experience phenomenologically⁹ (as was known from the research of Josephine Hilgard, Ronald Shor and others), it gave a new impetus to the research on personality correlates of hypnotizability. But is absorption really a personality correlate? As we will see in a moment, we disagree with this interpretation and favor a more cognitive explanation. Data seem to support this cognitive viewpoint since, for example, the Openness to Experience subscale of the NEO Personality Inventory (Costa and McCrae, 1992) has not

been found to correlate with hypnotizability even though absorption relates to certain facets of the Openness scale (Radtke and Stam, 1991; Glisky and Kihlstrom, 1993). As Wild *et al.* (1995) concluded, absorption reflects both a motivational readiness to engage in experiential functioning and a distinctive cognitive capacity to identify efficiently and richly elaborate objects of attention. Absorption seems to be more related to the phenomenological effects of specific attentional strategies, constituting a cognitive pattern of response rather than a personality trait.

Nonetheless, this first success in identifying a general correlate of hypnotizability opened the door to the investigation of the cognitive aspects of hypnotizability. A number of other attempts were made at capturing the essence of the hypnotic experience through diverse questionnaires. Among those, the most frequently used are certainly the Inventory of Childhood Memories and Imaginings (ICMI; Wilson and Barber, 1982) and the Dissociative Experience Scale (DES; Bernstein and Putnam, 1986). The ICMI, like the Tellegen Absorption Scale (TAS), was constructed using the phenomenological data collected from interviews with highly hypnotizable subjects. All of these questionnaires share a romantic view of hypnotizability where the highly hypnotizable subject is portrayed as living a life of continuous organismic experiences. It will not come as a surprise then that they all correlate with each other to a large degree (e.g. Oakman *et al.*, 1996). In many experiments conducted in our laboratory, the correlation between the ICMI and the TAS was as high as the test–retest reliability of each questionnaire, hovering in the mid to high 0.70s (see also Knox *et al.*, 2005). We will thus restrict our discussion of absorption-like questionnaires to the TAS.

Absorption has been defined as an ‘openness to absorbing and self-altering experiences’ (Tellegen and Atkinson, 1974). For example, high absorbers are generally moved by artistic creations, able vividly to recollect past experiences and tend to experience episodes of missing time (for a review, see Roche and McConkey, 1990). Absorption is probably the most widely tested correlate of hypnotizability because of its conceptual interest for many theorists of hypnosis (Hilgard, 1977;

⁹ Whereas the previous authors had attempted to survey the experiential world of the hypnotizable subjects, Tellegen and Atkinson constructed their questionnaire to survey the characteristicness of each statement, pointing to the dimensional aspect of the construct rather than a sampling (frequency, intensity, etc.) of specific experiences (see Balthazard and Woody, 1987).

Orne, 1977; Kihlstrom, 1985). Indeed, the relationship between hypnotizability and absorption has been considered important for understanding hypnotic abilities (Glisky *et al.*, 1991; Balthazard and Woody, 1992). Although the first studies showed moderate correlations to hypnotizability (reviewed in de Groh, 1989; Roche and McConkey, 1990; Kirsch and Council, 1992), further studies clearly showed that the correlation depended highly on the testing context. When absorption is measured in the context of a hypnosis study, correlations are generally of moderate size (i.e. around $r = 0.30$). This effect is found even if absorption is tested independently of hypnosis, and hypnotizability is 'spontaneously' tested after absorption is measured (e.g. de Groot *et al.*, 1988). However, if absorption is measured out of the distinctive context of a hypnosis study or a hypnotic-like study, its correlation to hypnotizability generally becomes very small and statistically nonsignificant (Council *et al.*, 1986, 1996; de Groot *et al.*, 1988; Drake *et al.*, 1990–91; Perlini *et al.*, 1992; Spanos *et al.*, 1993; Oakman *et al.*, 1996; Barnier and McConkey, 1999; Milling *et al.*, 2000).

The context effect clearly poses a threat to absorption as a correlate of hypnotizability and brings serious questions to mind. For example, how can we explain such an effect when this construct is argued to be a measure of trait and not a measure of context? Two main hypotheses have been proposed for the context effect with absorption and, up to now, both hypotheses have been seen as possible explanations.

According to the *demands hypothesis* (Milling *et al.*, 2000), both the absorption scale and hypnotizability scales are affected by the demands of the experimental context. More specifically, knowledge of the hypothesized relationship between the two constructs would affect participants' behavior on those two scales. This hypothesis is supported by findings that the in-context correlation between absorption and hypnotizability becomes statistically nonsignificant when response expectancy is controlled statistically (Council *et al.*, 1986).

According to the *construct ambiguity hypothesis*, absorption is not well operationalized and the items comprising the scale can be understood in many ways. If the items are indeed difficult to answer clearly, their perceived meaning

will clearly be influenced by the contextual information. For example, Oakman *et al.* (1996) argued that the absorption questionnaire does not specify if it is evaluating typical performance or maximal performance. Balthazard and Woody (1987) presented data suggesting that hypnotizability correlated to an intensity rating of absorption ($r = 0.35$) but not to a frequency rating of absorption ($r = 0.08$). It could thus be argued that individuals tend to answer in terms of frequency (or typical performance) in a non-specific context and in terms of intensity (or maximal performance) in a context of unusual experiences such as a hypnotic context. It may also be the case that filling out a series of tests in an undefined situation (an afternoon of testing, the first week of the academic year) may have unknown interaction effects with the embedded questionnaires. However, this hypothesis cannot explain why correlations have still been found in studies in which the hypnotic context was not established until after absorption was measured (e.g. de Groot *et al.*, 1988).

9.3.4. The context effect and other constructs

After the presence of a context effect was established for absorption, researchers began controlling for context effects with related constructs. Context effects, in which correlations with hypnotizability were statistically significant in context but nonsignificant out of context, were found, for example, for the DES (Nadon *et al.*, 1991; Silva and Kirsch, 1992; Spanos *et al.*, 1993), the Perceptual Alteration Scale (Green *et al.*, 1991) and imagery vividness (Perlini *et al.*, 1992). Although context effects were not always detected (e.g. Oakman *et al.*, 1996), their mere possibility raised serious questions about the validity and conceptual value of statistically significant in-context correlations between questionnaire variables and hypnotizability.

9.3.5. Beyond the context effect

In a way, the presence of context effects is not surprising, and they should be expected more often than not. In line with the *demands hypothesis*, context effects can be understood simply as a variation of what Orne (1962) called *demand*

characteristics—the assumption that a participant's behavior in any experimental situation will be influenced by the perceived demand characteristics, or implicit cues, of the experimental situation. Indeed, when participants have to fill out questionnaires in the context of a hypnosis experiment, it is easy for them to understand that the researchers expect these questionnaires to be related to their hypnotic performance. The practice of measuring potential correlates of hypnotizability out of the hypnotic context should thus become a standard in the field if one wants to avoid publishing false positives.

When the context effect is taken into account, one has to face the fact that there are still no robust and consistent correlations between measures of personality and hypnotizability. This fact leads to two possible conclusions: either the methodological approach that has been used up to now has been inadequate or hypnotizability is simply not related to personality. But what could be inadequate in the approach? One proposed explanation suggests that the way in which hypnotizability is measured might be problematic.

Hypnosis is a complex social and cognitive phenomenon. Hypnotizability also seems to be a complex variable and it is probably not a unitary concept. Balthazard and Woody's (1992) study on this topic illustrates the point eloquently. In their study, 160 subjects were tested on the HGSHS:A and a small group version of the SHSS:C. A subgroup of 120 subjects had responded to an absorption scale as part of a questionnaire study held previously, with no mention of the upcoming hypnosis testing. When the authors looked at the relationship between absorption and responses to the different hypnotic suggestions, they found that absorption was not strongly correlated with low-level (i.e. challenge and ideomotor) hypnotic suggestions, but was highly correlated with high-level (i.e. cognitive) suggestions. In other words, it appears that subjects can respond positively to easy suggestions using different abilities, but need absorption when the items are more difficult. If hypnotizability is such a heterogeneous variable, it might be nearly impossible to find stable and strong correlates. The solution would thus be to factorize hypnotic response; i.e. to find groups of

suggestions that produce a homogeneous pattern of hypnotic responses and to identify the correlates of each of these hypnotic factors.

Oakman *et al.* (1996) proposed a two-factor approach, in which they suggested that performance on most high-level suggestions (e.g. hallucinations, amnesia) depends mainly on an ability (or cognitive) component, while performance on most low-level suggestions depends mainly on a compliance (or social) component. Although additional measurement studies are required to validate this approach, it could certainly explain why strong correlates of general hypnotizability are difficult (if not impossible) to find. It could also explain why hypnotic training programs such as the CSTP can improve hypnotic response for a fair percentage of individuals who score low in hypnotizability, but not for all. CSTP may increase compliance and thus performance on low-level suggestions. Using a similar component approach, Woody *et al.* (2005; see also Woody and Barnier, Chapter 10, this volume) recently proposed that hypnotizability is composed of four distinct factors (direct motor, motor challenge, perceptual-cognitive and post-hypnotic amnesia). Such 'component approaches' might be the only way to find strong, reliable correlates of hypnotic performance.

It is also possible that, independent of the approach, searching for personality correlates of general hypnotizability is a dead end. Constructs such as absorption, imaginative involvement, fantasy proneness and dissociation are assuredly theoretically appealing, as they evoke the same hypnotic abilities that have been described since the romantic era (e.g. Faria, 1819). However, these constructs face a serious problem of circularity as explanatory devices: they all refer to unusual experiences that are characteristic of the hypnotic phenomenon. Thus, a correlation between absorption and hypnotizability suggests only that individuals tend to be hypnotized because they tend to manifest hypnosis-like behaviors out of hypnosis.

The same reasoning can be applied to questionnaires assessing imagery. Imagery has proven to be a difficult ability to assess in general. Once a favorite among the correlates of hypnotizability, it has nearly disappeared from contemporary experimentation. It is noteworthy that in a recent book devoted to the highly hypnotizable individual

(Heap *et al.*, 2004), reference to imagery skills or abilities was virtually nonexistent. A number of reasons may explain this apparent fall from grace. First, as noted above, imagery is generally difficult to assess. Second, the correlations found between imagery and hypnotizability have waxed and waned across studies. Third, the fact that most hypnotic suggestions are imagery based ('your arm is becoming stiffer and stiffer like an iron bar' or 'imagine that your hand is covered by a thick glove, so thick that you will not feel anything') is a serious confound. As Sheehan and Perry (1976) summarized well, imagery appears to be a necessary ability to respond to hypnotic suggestions, but certainly not sufficient. The relationship is complex and, if mental imagery plays a mediating role in experiencing hypnotic effects, it may not be directly related to hypnotizability (see, for example, Sheehan and Robertson, 1996). As we suggested for absorption and as noted by Woody *et al.* (2005), imagery may simply represent a facilitating factor in the elaboration of a more vivid subjective experience (a point also made by Spanos in describing success in training of hypnotizability).

Whereas imagery and absorption may have outlived their usefulness as correlates of general hypnotizability, they may still be useful as predictors of more specific hypnotic items.¹⁰ As mentioned previously, in predicting responses to a false memory suggestion (Labelle *et al.*, 1989), highs who scored in the upper range of an imagery scale (Paivio, 1971) were more prone to integrate this suggestion. In a related experiment, subjects who were regressed to their mother's womb and asked to describe their sensations and feelings gave more details and were more confident in the reality of their 'suggested memories' if they had scored high on absorption *and* hypnotizability than the other subjects (Kandyba and Laurence, 1996). Subjects in this experiment were successively regressed to the ages of 5 years old, 1 year old and in their mother's womb. Whereas being highly hypnotizable *or* high on absorption predicted detailed

memories at 5 years old, only subjects who were high on both measures gave detailed accounts of memories at 1 year old and from the womb. This combination of skills also predicted the high level of confidence that subjects held in their memories.

Paper-and-pencil tests, although useful, can only provide a static picture of the highly hypnotizable subject. In recent years, many researchers have started to investigate nonhypnotic performance measures of attention and memory to understand better hypnotic behaviors and experiences.

9.4. Current research

9.4.1. Performance correlates of hypnotizability

There are two different approaches to investigating performance patterns of hypnotizable individuals. The first one looks at patterns of performance across different suggestions during hypnosis. Not all highly hypnotizable subjects respond in the same way to suggestions. In our studies on the hidden observer, for example, highly hypnotizable subjects were clearly divided into two distinct groups. The subjects who indicated a hidden observer also reported duality during age regression, were more prone to accept a false memory suggestion and demonstrated more residual amnesia following deinduction. The subjects who did not indicate a hidden observer did not report duality, were less prone to accept a false memory suggestion and showed little residual amnesia following deinduction (see Laurence *et al.*, 1986). This differential responding style may represent differential attentional processes or processing in highly hypnotizable subjects (see McConkey, Chapter 3, this volume). McConkey and Barnier (2004) provided a succinct summary of the performance patterns of highly hypnotizable individuals in responses to diverse suggestions during hypnosis. We will thus not review this area and refer to it only to highlight a specific point when needed. It is, however, an important aspect of hypnotic responsivity that should be kept in mind when investigating nonhypnotic patterns of response in highly hypnotizable subjects. Identifying patterns of hypnotic performances among highs may help

¹⁰ We will temper this conclusion by suggesting that it may be different with children where imagery, fantasy proneness and absorption may play a different role (see, for example, Poulsen and Matthews, 2003).

us investigate nonhypnotic ones. It may also help us understand some of the moderate correlations found between questionnaire assessments of phenomenological experiences and hypnotizability. But we must approach these diverse patterns with caution. If one remembers the typologies that were proposed in the nineteenth century, they expanded exponentially as more and more exceptions were found. General typologies have a tendency to become more complex as more and more cases are found that do not correspond to the general types proposed. Keeping this point in mind, we propose that patterns of hypnotic responses should correspond to patterns of nonhypnotic responses; in other words, we should be looking at convergence of responses rather than multiplicity of responses.

The second way of looking at performance patterns of highly hypnotizable subjects is to identify cognitive or attentional correlates of hypnotizability measured ideally in a context removed from the measurement of hypnosis.¹¹ In recent years, the Stroop effect has been the topic of many investigations that have led to an interest vis-à-vis the role of the attentional systems in hypnotizability. Two seminal experiments demonstrated clearly the role played by these systems in hypnotizability. It is important to note here that these two experiments were conducted out of the hypnotic context. Subjects had no idea that their performance on the Stroop test was linked to their hypnotizability assessment, which had taken place in a different context. We mention this point again to emphasize that the measurements of individual differences linked to hypnotizability are vulnerable to context effects. If we assume that hypnotizability is a stable characteristic of the individual it should be present and active in contexts other than the hypnotic one.¹² In the first experiment (Dixon *et al.*, 1990), high hypnotizables differed in the automaticity with which they processed verbal information from the low hypnotizables. In this study, automatic and strategic effects on

the Stroop task were assessed for subjects previously classified as high, moderate or low on hypnotizability. Automatic effects were measured by establishing individual thresholds for word perception using a staircase method. Color words were presented followed by a color patch to be named. Strategic effects were assessed by manipulating and informing the subjects regarding the probability of congruent trials (e.g. red word and red color patch) and incongruent trials (e.g. red word and blue color patch). During the first testing session, the word would predict the color patch on 25 percent of the trials. During the second testing session, the word would predict the color patch on 75 percent of the trials. The results indicated that, compared with moderate and low hypnotizables, high hypnotizables displayed shorter mean reaction times on congruent trials. When differences in mean reaction time between congruent and incongruent trials were examined, high hypnotizables showed a significantly larger discrepancy than that of the moderate and low hypnotizables. The size of the discrepancy varied according to expected probability. Thus, high hypnotizables exhibited the largest discrepancy between their mean reaction time when they expected the word and color patch to match on 75 percent of the trials. This larger discrepancy was explained as greater facilitation and interference effects experienced by high hypnotizables. Highly hypnotizable subjects processed information with greater automaticity and were more likely to learn and implement a strategy to improve their performance.

In a follow-up study, Dixon and Laurence (1992a) confirmed the automaticity hypothesis and extended it by showing that highly hypnotizable subjects made more efficient use of attentional strategies than lows. In this study, only two color words and patches were used (red and blue). All subjects were told that if the word was blue then three out of four times the color patch would be red, or if the word was red,

¹¹ Ideally indeed since it is often difficult to do so because it complicates experiments and makes them more costly. Unfortunately, most of the neuroimaging studies have not yet understood that point and it renders their results ambiguous at best, a complaint we had already voiced in 1992 and 1998 (Dixon and Laurence, 1992b; Laurence *et al.*, 1998).

¹² As we will discuss in the section on social-psychological correlates, the hypnotic context can potentiate positively or negatively attentional processes in subjects. It seems reasonable to assume (if not necessary) that if the attentional system functions differently in highly hypnotizable individuals it should be possible to index it in nonhypnotic contexts.

then three out of four times the color would be blue (75 percent incongruent probability). Time delays between the presentation of the color word and the color patch were manipulated to control for strategic effect. At very short delays, subjects had no time to implement a strategy. The results indicated that high hypnotizables responded faster to congruent trials. As inter-stimulus intervals (ISIs) increased, high hypnotizables exhibited a reversal of the standard Stroop pattern. Their mean reaction time became shorter for incongruent trials. Although low hypnotizables also showed the reversal effect, high hypnotizables were able to implement the strategy more rapidly, and the reversal of the Stroop effect was observed at shorter presentation delays than it was for low hypnotizables. These two studies are the only ones that: (1) were conducted in a non-hypnotic context; and (2) made use of a Stroop task where the words were presented as 'primes' before colors were presented as 'targets'. Such a design ensures that the priming effect of the word will be maximized and gives time for automatic processing to kick in.

Before and since these studies were conducted, most research investigating the relationship between hypnotizability and the Stroop effect has made use of different methodologies and testing conditions, most of them ignoring the impact that the hypnotic context may have on subjects' performance. Stroop effects have been looked at during hypnosis or during the session in which the hypnotic induction was administered. For example, Rubichi *et al.* (2005) reported that highly hypnotizable subjects had a lower error ratio on a Stroop naming task, indicating a more efficient attentional focus than low hypnotizables. Because the test was administered immediately prior to the hypnotic evaluation, it is difficult to assess how it could have affected either highs (more voluntary uses of strategy for example) or lows (less motivated to perform). Unfortunately, the data that could have shed some light on the issue

were not reported.¹³ In a similar fashion, Sheehan *et al.* (1988) investigated the use of strategies in response to a Stroop test during hypnosis. Highs were found to make better use of the strategy provided. However, knowing that lows respond to the hypnotic context differently, their performance may have been undermined by their motivation and expectations. It becomes difficult then to conclude anything about the differential efficiency of the attentional system in such procedures. In these studies, it is the use of strategies that is under investigation, not the role of automaticity.

In two recent studies, specific suggestions have been used in an attempt to alter the interference effect of the Stroop test post-hypnotically (Raz *et al.*, 2002). Following a post-hypnotic suggestion designed to avoid attributing meaning to the target words, highly hypnotizable subjects successfully eliminated the classic interference effect normally found on incongruent trials. Raz *et al.* (2003) replicated these results under the condition of cyclopegia, eliminating the possibility that voluntary strategies were responsible for the effect reported. In support of these findings, MacLeod and Sheehan (2003) reported a 'case study' in which a highly suggestible individual succeeded in eliminating the Stroop interference effect.¹⁴

These results are particularly important as they seem to demonstrate in a rather dramatic fashion the ability of highs to manipulate their attentional systems from the top to the bottom. At present, these results have yet to be replicated in a systematic fashion. Some preliminary data

¹³ We have often found in the diverse experiments that we have conducted where the Stroop test and the hypnotic session were done during the same session or clearly linked together, that low hypnotizables tended to perform in a less than optimal fashion whereas the highs did not seem to be affected.

¹⁴ Since we are on the topic of anecdotes, the first author, while at the University of Waterloo on a post-doctoral research fellowship in 1985 with the late Ken Bowers, conducted a pilot study where highly hypnotizable subjects while hypnotized were given the suggestion that they would not be able to read the presented words during a Stroop task in an attempt to see if the interference effect could be eliminated. The work was carried on with Jim Cheesman, then a doctoral student with Phil Merikle. The pilot study had to be canceled after testing three highly hypnotizable subjects who experienced acute anxiety reactions as the Stroop test unfolded! The Stroop test was presented through a viewing tube that circumvented problems associated with differential dark adaptation for detection and color-naming trials. It also rendered more difficult (but not impossible) the use of voluntary avoidance strategies. Other times, other mores, other results!

may temper these spectacular results. Hung (2005) and Hung and Barnier (2005) in two quasi-replications of the Raz *et al.* protocol failed to replicate the hypnotic elimination of the Stroop effect. They demonstrated that some subjects were able to modulate the interference effect, but their performance appeared to rely strongly on the use of strategies (natural or suggested). An interesting result of these studies was the demonstration that the suggestion used to modulate the Stroop color naming had more impact on the experiential reports of subjects (their ability to read the words) than on their actual behavioral performance (their ability to name the colors of the words quickly). Even though a majority of highs reported not seeing the color words, they still showed evidence of an interference effect.

When the classic Stroop (words presented in different colors) is administered, the interference effect found in the Dixon *et al.* studies has proven difficult to replicate (Sheehan *et al.*, 1988; Kaiser *et al.*, 1997; Raz *et al.*, 2002, 2003). A number of reasons may account for these apparently divergent results. The difference in methodology is certainly a very important one. Both the separation of prime (color word) and target (color patch) and the nonhypnotic context are unique to the Dixon *et al.* experiments. There are, however, a number of general conclusions that can be drawn. Hypnotic inductions increase interference in highs but not in lows, as shown in Sheehan *et al.*'s (1988) study. This could simply be a result of highs' increased reaction to the demands of the hypnotic context (i.e. to pay attention to external cues such as the hypnotist's verbal suggestions). However, when given suggestions to reduce interference either in hypnosis or post-hypnotically, highs can reduce interference more than lows. This suggests that highs' attentional capacities are more 'flexible' or at least more responsive to hypnotic demands/suggestions than those of lows.

Outside the context of hypnosis, the difference between highs and lows seems more subtle. But highs seem to process verbal and perceptual information more automatically. Consequently, they might be less efficient when the best strategy to avoid interference involves ignoring the target word (e.g. Dixon *et al.*, 1990) and more efficient when the best strategy involves using

the target word (e.g. Rubichi *et al.*, 2005). Further evidence for individual differences in automatic processing comes from a neurophysiological investigation of evoked potentials during a Stroop-like task. Subjects who had been previously classified as highs or lows (1 year earlier in a different laboratory) were presented with a Stroop task while their event-related potentials (ERPs) were recorded at central, parietal and frontal sites (Baribeau *et al.*, 1994). The Stroop test consisted of four tasks; manually recognizing: (1) a color word written in black (word recognition, e.g. RED); (2) the color of a series of XXXs (neutral, e.g. XXX printed in red ink); (3) the color when the color word and the color stimulus were the same (congruent, e.g. RED printed in red ink); and (4) the color when the word and the color stimulus differed (incongruent, e.g. RED printed in blue ink). Contrary to the two earlier studies by Dixon *et al.* that used randomized block presentations, trials were grouped by type (e.g. all congruent trials together).

The main finding of the neurophysiological study was that highs showed significantly shorter latencies of a pre-300 negativity at the frontal (Fz) site for the word (mean for highs, 240 ms; for lows, 291 ms) and neutral conditions (mean for highs, 250 ms; for lows, 291 ms) and nearly significant also in the congruent condition. These results provided further support for the automaticity hypothesis (this negativity preceded the P300, thus indexing nonconscious processing). It also suggested that the greater automaticity exhibited by highs was not exclusively verbal, but was more perceptual in nature.

Another interesting dimension of automaticity related to hypnotizability involves the acquisition of automatization. Highly hypnotizable subjects may indeed show more automatic responses than their less hypnotizable counterparts, but this only represents the end-result of attentional processes. It may be that the acquisition of automatic responses varies between highs and lows. Few studies have looked at the process of automatization *per se*. The first hint of a differential rate of automatization between highs and lows came from the Dixon and Laurence (1992a) study where highs reversed the Stroop effect significantly faster than lows, which suggests a more efficient optimization of the suggested strategies. At an ISI of 200 ms, highs

demonstrated the typical interference effect, except that in this case congruent trials were slower than incongruent ones. Lows could achieve this effect only at an ISI of 400 ms. We re-investigated individual differences in acquisition of automatization between highs and lows using a Stroop-like perceptual task (Laurence *et al.*, 1997) adapted from MacLeod and Dunbar (1988). The perceptual task consisted of learning associations between four colors and four irregular shapes. Subjects learned the task in five sessions spread over 5 days, and received over 2300 shape-naming practice trials. The shape stimuli were four low-association value random polygons selected from a set developed by Vanderglass and Garvin (1959). The shapes were called Red, Blue, Green and Yellow. Following an acquisition phase, subjects were asked either to name the actual color of the shape or to name shapes by using their corresponding color name. When subjects had to name the shape using their corresponding color name, they exhibited greater facilitation (shorter mean reaction time) on congruent trials, and greater interference (longer mean reaction time) on incongruent trials regardless of their degree of hypnotizability, replicating the general effect found by MacLeod and Dunbar (1988) on the possibility of acquiring new automatic responses. Highs, however, were significantly slower than lows in naming a shape or a color when the two stimuli were incongruent. Highs also displayed the trained 'automatic response' (interference of shape on color naming) faster than their low counterparts. These findings are consistent with the hypothesis that highs are faster at learning a task and automatizing it. We do not know of any other study that has looked at the process of automatization, but it may certainly be a promising approach to the understanding of some of the differences in attention found between high and low hypnotizables.

More recently, cognitive inhibition using negative priming tasks has been the focus of interest in a further attempt to identify attentional differences between subjects of differing hypnotizability levels. Negative priming is the ability to suppress irrelevant information from working memory. Westberry (1984) reported that negative priming was positively associated with absorption. David *et al.* (2001) reported a

correlation of 0.49 in a preliminary study between negative priming and hypnotizability as measured by the HGSHS:A. In two replication studies measuring negative priming and hypnotizability, David and Brown (2002) found significant correlations between these variables. Their studies did not investigate automaticity *per se* in negative priming, but rather strategic (conscious) processing in a semantic categorization task modified to measure negative priming. Subjects were shown the stimuli *before* the actual test as lists of 'to-be-forgotten' and 'to-be-remembered' words, and hence processed the inhibited material consciously. In study 1, a correlation of 0.42 was found between the negative priming task and hypnotizability. In study 2, a similar positive correlation was also found. David and Brown suggested that further replications use a more rigorous measure of cognitive inhibition to evaluate the stability of this relationship. We recently attempted just such a conceptual replication. Our negative priming task presented the stimuli in 'real-time', and therefore required subjects to rely on their automatic processing of stimuli instead of their strategic, conscious processing. Subjects were presented with pairs of animals. Their task was to name the smaller animal as rapidly as possible. On subsequent trials, the target animal became the to-be-inhibited one (Laurence *et al.*, 2005). With 60 subjects, screened on the HGSHS:A (Shor and Orne, 1962) as in David and Brown's studies, we failed to find a relationship between negative priming (using reaction time as the measure) and hypnotizability scores. Because reaction time data can be quite reactive, we analyzed the data using the coefficient of variability (CV), an index that combines information about latencies (mean response times) and variability of responding (Segalowitz and Segalowitz, 1993). The CV is defined as the standard deviation divided by the mean response time, and indicates the variability for a given level of response latency. In other words, this is a measure of the *stability* and efficiency of responding. Even though the CV has been used in a number of other areas of psychology (McManus *et al.*, 1986), it has never been used to investigate automaticity in hypnotic responding. The main question here was to see if the overall process of inhibition was different across

hypnotizability levels in the same way that the process of automatization seems to be. As we hypothesized, the CV for highly hypnotizable subjects was significantly lower (0.20) than for mediums (0.24) and lows [0.25; $F(2,57) = 4.887$, $P < 0.05$]. Within the cognitive inhibition paradigm, highly hypnotizable subjects appeared to be able to respond in a more stable and efficient way than the other subjects. These promising results point once more to the importance of investigating the process of different attentional mechanisms rather than their simple consequences.

A study published by Braffman and Kirsch (2001) indirectly supports the idea that cognitive inhibition¹⁵ may be one of the aspects of the attentional systems that operates differently in highly hypnotizable subjects. These authors looked at the relationships between simple reaction time, go/no go reaction time, expectancies, hypnotic and nonhypnotic suggestibility and hypnotizability (in this study, hypnotizability was defined as hypnotic susceptibility from which nonhypnotic suggestibility was co-varied). In the go/no go reaction time task, subjects were asked to indicate as rapidly as possible if the presented stimulus was the one they had been instructed to identify. Contrary to a simple reaction task, subjects must decide first if the stimulus presented is the correct one before responding. Both reaction time tasks (each one co-varied on the other) were related significantly to hypnotic suggestibility, and hypnotizability still explained 6.5 percent of unique variance once nonhypnotic suggestibility and expectancies were co-varied.¹⁶ The positive correlation between go/no go and hypnotizability

indicates that highs seem to take more time resolving the conflict in working memory. Overall, the performance correlates of hypnotizability may provide a more promising avenue to explore than paper-and-pencil tests. Automaticity, the acquisition of automatic responses and how conflict resolution is handled in working memory may all shed light on the roles of the attentional systems in hypnotizability and help us to understand its experiential aspects.

9.4.2. Neurophysiological and genetic correlates of hypnotizability

The relationships between brain processes and hypnosis/hypnotizability are the subjects of at least three chapters in this book (see Spiegel, Chapter 7; Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume). Thus, we will not review the area in detail, but rather point out a number of issues in this area that are important to keep in mind for evaluating potential neurophysiological correlates of hypnotizability.

Many authors have emphasized the relationships between hypnotizability and sustained attentional abilities. Highly hypnotizable subjects have a superior ability to sustain their focus of attention and attend exclusively to suggested events (see, for example, Crawford *et al.*, 1993; Crawford, 1994). Although many neuroimaging studies point to the importance of frontal lobe activation in highly hypnotizable subjects, the translation of these observations into identifiable, specific behavioral differences between high and low hypnotizables is still to come. As Jamieson and Sheehan (2002) pointed out, even though there seems to be reasonable evidence from neurophysiological studies that support differences in attentional processes between high and low hypnotizables (see, for example, Horton and Crawford, 2004), the absence of behavioral differences precludes any firm conclusions on the role of sustained attentional abilities in hypnotizability.

As is emerging from the data on Stroop effects and negative priming tasks, attentional differences (if any) may represent only one of the end-results of more basic differences in perception, working memory and some aspects of the attentional systems. Cognitive software is certainly

¹⁵ Cognitive inhibition can also be reconstrued as a working memory process. In this case, however, there is no inhibitory process at play but rather the resolution of a conflict in working memory. The resolution of the conflict comes with a cost (see, for example, Park and Kanwisher, 1994).

¹⁶ The magnitude of unique variance explained may not send anyone dancing in the streets; however, it points to some process being independent of nonhypnotic suggestibility and expectancies. Since the semi-partial correlations were not presented in the paper, it is difficult to assess how 'independent' the reaction time data were from the previous variables.

informed by neuronal hardware, but there may not be a direct connection between the two. Again, as suggested by studies on the Stroop effect and negative priming, we may need to pay more attention to the process of attention-related systems than to their end-results, which are often influenced by the demand characteristics of each experimental setting.

Woody and Szechtman (2003) raised a similar set of questions about the usefulness of neuroimaging studies in the investigation of hypnosis. Their usefulness can only bear fruit if the methodologies and designs employed are as complete as they can be. For example, the often cited study by Rainville *et al.* (2002) about both hypnosis and pain and the alleged hypnotic 'state' lacks the basic control group necessary to draw conclusions. In their experiment, highly hypnotizable subjects had to respond to an emotional or a sensory suggestion to reduce pain while hypnotized. The resulting brain scan showed that the activation of the brain varied according to the suggestion. The same test, however, was never done without the subjects being hypnotized. It becomes impossible to resolve if the effects were due to hypnotizability, hypnosis or an interaction of both variables (for more detail and similar comments, see Oakley, Chapter 14, this volume). In fact, Wagstaff (2004) has interpreted Rainville *et al.*'s results in social-psychological terms as validly if not more so than any state theorists.

The link from neurophysiology to genetics is certainly tempting, and some recent research has proposed such a link (e.g. Raz, 2005). Few studies have looked at the heritability of hypnotizability. The few studies that have focused on twins (Morgan *et al.*, 1970; Morgan, 1973) demonstrated a significant relationship between the hypnotizability scores of monozygotic twins compared with dizygotic pairs and fraternal pairs. More recently, Lichtenberg *et al.* (2000) as well as Raz (2005) focused on potential genotypes, especially those that may predict prefrontal executive cognition and working memory tasks and are involved in dopaminergic and noradrenergic metabolism, specifically the catechol *O*-methyl transferase (COMT) genotype. They specifically chose this genotype because of its potential implication with the attentional systems. The polymorphic COMT

(valine/methionine alleles) was found more frequently in highs than in mediums and lows, who harbored the COMT met/met and COMT val/val combination. It has been proposed that this particular polymorphic gene could also be linked to the expression of schizophrenia, pointing to some dysfunctional aspects of the attentional systems. A recent study, however, dismissed this hypothesis (Williams *et al.*, 2005).

It is noteworthy, however, that the polymorphic COMT gene has been shown to play a role in cognitive functioning. A recent study (Reuter *et al.*, 2005) that looked at the interaction of two dopaminergic genes (COMT *DRD2 TAQ 1A), in an attempt to document genetic influences on cognitive abilities, found that this interaction could explain 13 percent of the variance in interference performance as measured by the Stroop test—a promising line of research that may help understand the potential genetic canvas of hypnotizability.

Even though caution should be the rule here, it is interesting to see research on correlates venture into the genetic domain and particularly in the exploration of attentional processes that may index hypnotizability. However, genetic predispositions do not necessarily find their expression in a direct and unique way. Socio-environmental factors can shape their final expressions. As was emphasized by Woody and Szechtman (2003), heritability will be molded by the environment, and the potential genetic network at play in the expression of hypnotizability may reflect a general disposition of the attentional systems leading to some of the subjective experiences linked to hypnotizability.

9.4.3. Social-psychological correlates of hypnotizability

By far the most successful approach to documenting correlates of hypnotizability has been the social-psychological approach proposed originally by Ted Barber, Ted Sarbin, Bill Coe, and Graham Wagstaff, but championed experimentally mostly by the late Nick Spanos, and by Irving Kirsch and Steven Lynn. The research output of these colleagues is quite impressive, and their approach to the correlates of hypnotizability, and to the investigation of hypnosis more generally, has often countered the more vocal

proponents of hypnosis as an altered state or the uncritical acceptance of hypothetical constructs (one can easily think of Hilgard's hidden observer and its amnesic barrier or the multiple personality controversy in the 1990s). In fact, the emergence of a cogent social-cognitive explanation of hypnosis by Spanos revived both the interest and enthusiasm of hypnosis researchers in general. As we will see, if nothing else, measuring social-psychological correlates (such as beliefs, attitudes and/or expectancies) nearly always leads to high correlations with hypnotizability; this is a non-negligible comforting finding for those who attempt to uncover the inner makings of hypnotizability. Over and above these findings, however, how can we understand what is measured by these different factors?

In numerous studies over a long period of time, beliefs, attitudes and motivation have shown significant relationships with hypnotizability (see, for example, Spanos and Chaves, 1989). We will not review findings of this research *per se* as there seems to be a general consensus that these different variables are positively related to hypnotizability (although it is worth noting that the inter-correlations between these variables are generally high and that they may in fact be measuring a general positive willingness to experience hypnosis). Instead, we will focus on two major issues that have been raised by the social-cognitivists in recent years. The first one is the role played by expectancies in hypnotic suggestibility; the second one is the issue of redefining hypnotizability as hypnotic suggestibility from which nonhypnotic suggestibility has been statistically controlled. Both of these issues have been proposed by Kirsch and have generated substantial controversy.

Response-set theory is at the basis of Kirsch's position. Kirsch's (1990; see also Lynn *et al.*, Chapter 5, this volume) response expectancy theory is rather simple. Individuals expect that a behavior will happen and, if it does, it strengthens the next occurrence of this behavior. Expectancies thus drive behaviors. It is quite difficult to disagree with such a position. As we have seen earlier, this explanation of hypnotic responses was part of the original 1784 Commission of Inquiry, and part of Faria's explanation of animal magnetism. It also was the

subject of some heated discussion in the second part of the eighteenth century with Bernheim who, like Kirsch, raised the issue of the role of expectant treatment in medical practice. And it goes on . . .¹⁷ The disagreement may not be with the statement as much as with a misunderstanding of what is meant by expectancies. Of course it does not help either that authors present expectancies as the sole generator of hypnotic responses (see, for example, Silva *et al.*, 2005), a grandiloquence that, as we will see, may not be warranted.

Expectancy is the belief that one's effort will result in the attainment of desired performance goals. This belief, or perception, is generally based on an individual's past experience, self-confidence and the perceived difficulty of the performance goal. The cue word here is past experience. If past experiences are one of the main components of an expectancy judgment, why would it be surprising that expectancies about being hypnotized are a good predictor of future hypnotic behavior? In fact some of the research on expectancies provides us with the answer. Council *et al.* (1986) measured hypnotic expectancies twice: once before the hypnotic induction and once after the hypnotic induction. They found that measuring expectancies after the administration of a hypnotic induction significantly increased their relationship with hypnotizability scores, accounting for 35 percent of the variance. Similar results were found by Spanos *et al.* (1983), Silva and Kirsch (1992) and even Melei and Hilgard (1964; for a summary of some of that research, see Spanos, 1989). In more recent studies, the correlations between expectancies and hypnotizability scores have attained new heights, sometimes even higher than the test-retest reliabilities of the hypnotic scales used. Because of these very high correlations, authors have been tempted to conclude that there was nothing left to explain in hypnotizability scores. Expectancies were the only causal

¹⁷ A reminder also of a less known paper by the late Martin Orne on the goals of psychotherapy entitled: 'On the nature of effective hope', published in 1968. By effective hope, 'what is meant is a very specific kind of expectation which will affect the patient's attitudes, beliefs, and actions during treatment and its eventual outcome' (p. 403).

factor necessary to explain hypnotic behaviors. However, as Kirsch (1999) noted:

These data provide strong evidence for a causal relation between expectancy and hypnotizability, but they still leave some variance in responsiveness unexplained. It is possible that expectancy is the sole proximal determinant of hypnotizability and that the residual variance is a result of measurement error. Conversely, the unexplained variance may be due to a talent or personality characteristic, the nature of which is yet to be established (p. 107).

A number of recent experiments seem to indicate that expectancies may not be sufficient to explain general hypnotic behavior as well as more specific hypnotic suggestions. Before summarizing these, however, it is important to realize that most of the studies that have assessed the relationship between expectancies, nonhypnotic suggestibility and hypnotizability have analyzed their results using multiple regressions but presented only the first-order correlations and their associated variances. What would certainly be more useful is to look at the semi-partial correlations, an indicator of the overlap between different predictors. In a recent study (Laurence *et al.*, 2005) where we measured expectancies for both imaginative suggestibility and hypnotic suggestibility, we found, in line with other studies, that expectancies correlated 0.42 with hypnotizability and that nonhypnotic suggestibility correlated 0.72 with hypnotizability. The interesting point was that when nonhypnotic suggestibility was co-varied, the semi-partial correlation for expectancies dropped to 0.007, indicating that subjects' experiences were much more telling of their hypnotizability than their expectancies; in other words, subjects' expectancies explained nothing of their hypnotizability that was not already explained by their previous experiences of nonhypnotic suggestions. When we looked at which subjects were more accurate in predicting their hypnotic responses, we found that mediums and highs were quite good at predicting their hypnotic behaviors. Interestingly, the lows were the only subjects who significantly overpredicted their performances, whether it be in imaginative suggestibility or hypnotic suggestibility. When we analyzed the prediction of imaginative suggestibility, we found that expectancies were a major correlate over and above hypnotic

suggestibility. This indicates that when subjects predict their imaginative suggestibility, they make use of experiences other than their hypnotic performance. Indeed, we found that both absorption and Stroop interference accounted for unique variance in nonimaginative suggestibility (when hypnotic suggestibility was statistically controlled for). In other words, subjects' past experiences and knowledge of their abilities are crucial ingredients of their expectancy judgments. This point was further emphasized by Silva *et al.* (2005) who reported that fantasy proneness (as measured by the ICMI) was a significant predictor of objective expectancies and that the ICMI and a measure of experiential processing were significant predictors of subjective expectancies.

If expectancies can be seen as an important and stable correlate of nonhypnotic suggestibility and hypnotizability, they cannot at this point be construed as the sole causal link to hypnotic performance. Whether one looks at hypnotic or nonhypnotic suggestibility, one question remains. What are the bases of expectancy judgments whether or not they are elicited in a hypnotic context? The correlates of hypnotizability (absorption, ICMI, past experiences, attentional tasks) seem also to be related to nonhypnotic suggestibility and related expectancies, which may indicate, as Kirsch had noticed, that 'a talent or personality characteristic, the nature of which is yet to be established' may be at the root of hypnotic and imaginative suggestibility and expectancy judgments. Let us propose the following thought-experiment: if a group of subjects are asked to predict their performance on a 100 m dash, we would expect a moderate correlation between their expectancies and their performance to emerge. If they actually run it and are then asked again to predict their performance, we would expect a significant increase in the correlation between their expectancies and their results. Can we then conclude that their results are caused solely by their expectancies? Obviously not, and to conclude such is a misleading oversimplification.

Looking at nonhypnotic suggestibility is an important research question as it may inform us about the potential interactions between abilities and contexts. From the onset of the different measurement scales, hypnotizability was considered a performance measure, a response to

suggestions administered following a hypnotic induction. If we believe as we have written many times in this chapter that hypnotizability is an individual difference that can be activated in different contexts, then it may in fact be rooted in the same substrate as nonhypnotic suggestibility.

9.5. Future research directions and implications for hypnosis

Where to go from here? Certainly one sober conclusion is that we still do not know very much about hypnotizability in its traditional meaning or even as imaginative suggestibility for that matter. Whether or not we look at this ability in or out of the hypnotic context, we still have to identify its main characteristics. Questionnaire studies have shown us that the search for personality correlates is probably a dead end, both because of the disappearance of most effects outside of the hypnotic context and because of its potential circularity. And it is certainly not enough to propose that expectancy judgments may be the main causal factor for hypnotizability if we cannot explain what are the factors underlying expectancies. We have for a long time suggested that hypnotizability should be studied outside the hypnotic context if we hope to understand better the mechanisms at play in this multidetermined ability.

There are a number of promising lines of inquiry: first, the focus on attentional processes and, more specifically, on the acquisition of automaticity. It implies focusing not only on attention but also on working memory, a crucial process in any task that we ask subjects to perform. The interaction between the two may ultimately reveal the *modus operandi* of automaticity and, with a bit of imagination, the understanding of involuntariness judgments in response to hypnotic suggestions. And if, as we suspect, the ability to automatize rather than the level of automaticity is a correlate of hypnotizability, it would be important to evaluate the process of automatization (e.g. with coefficients of variability) and not only the end-result (e.g. mean reaction time or number of errors).

A second line of inquiry is to understand better the roots of expectancy judgments for both imaginative and hypnotic suggestibility.

Important also is the identification of factors that may be at play either independently of expectancies or as more proximal to basic processes whether cognitive, attentional, emotional or physiological; more proximal because expectancy judgments are by definition also multidetermined, higher level constructs. Some recent research, as we have seen, has started to identify common correlates and, if we go on with the notion of imaginative suggestibility, its correlates should also play a role in explaining hypnotizability in its traditional rendition.

Other fields that need to be better understood may demand a redefinition of the concept of hypnotizability. The component approach to hypnotizability is one of these fields. If hypnotizability can indeed be better described as a general ability upon which are grafted some specific ones (Woody *et al.*, 2005), the search for correlates should also follow these lines. There might even be a chance for questionnaire studies to be useful in such an approach.

As a last word, the search for social-cognitive correlates cannot be separated from other aspects of hypnotic research, aspects that are presented in this book in a piecemeal fashion. Genetic and neurophysiological quests must translate into cognitive and behavioral observations as well as phenomenological ones. The relationships however will not be simple. Here lies the interest for psychology of understanding such an intriguing phenomenon.

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CHAPTER 10

Hypnosis scales for the twenty-first century: what do we need and how should we use them?

Erik Z. Woody and Amanda J. Barnier

10.1. Introduction

Reviewing over 200 years of hypnosis research, in its varied historical guises stretching back to Mesmer in the late 1700s, Dixon and Laurence (1992) observed:

What really renders the history of animal magnetism, artificial somnambulism, lucid sleep, nervous sleep, neurypnology, hypnotism, and hypnosis fascinating is the continuous observation of stable individual differences in patients and subjects who undergo an induction procedure. ... Most of those who have shaped the history of hypnosis not only recognized the major importance of these individual differences in responsivity to suggestions, but also attempted to document them (p. 36).

There are several possible strategies for documenting such individual differences. However, an approach characteristic of science is to devise a scale that assigns different numbers to the varying manifestations of the phenomenon under study. The first such hypnosis scales were developed in the late 1800s by Bernheim (1886/1964) and Liébeault (1889). For example,

Liébeault measured hypnotic depth using a six-point scale, ranging from 'drowsiness' to 'profound somnambulist sleep'.

Another phase of hypnosis scale development came in the 1930s, including work by Barry *et al.* (1931) and Davis and Husband (1931). Friedlander and Sarbin's (1938) measure represented a major step forward in scale construction; they freely borrowed test suggestions from the earlier scales, but put more emphasis on a standardized induction procedure, a standardized set of test suggestions and clear scoring criteria based on observable responses. Further hypnosis scale construction followed in the 1940s, including work by LeCron and Bordeaux (1947) and Watkins (1949).

However, it was the scale construction work of Weitzenhoffer and Hilgard in the late 1950s that completely transformed the scientific study of hypnosis. They began by modifying the hypnosis scale of Friedlander and Sarbin (1938). They introduced a simplified pass/fail scoring scheme for the response to each test suggestion, and they added additional relatively easy test suggestions, yielding two alternate forms: the

Stanford Hypnotic Susceptibility Scales, Forms A and B (SHSS:A and SHSS:B; Weitzenhoffer and Hilgard, 1959). Unlike scores on previous hypnosis scales, which were skewed in a way that suggested that most people had negligible hypnotizability, the scores on the SHSS:A and SHSS:B yielded a reasonably normal distribution of individual differences. In this way, as well as in their good psychometric properties, these scales resembled other, widely recognized psychological scales, such as those for intelligence.

To overcome one shortcoming of the SHSS:A and SHSS:B, Weitzenhoffer and Hilgard developed other hypnosis scales. Although the SHSS:A and SHSS:B emphasize relatively easy test suggestions, such as suggested motor movements, hypnosis researchers tend to be more interested in relatively difficult suggestions, such as hallucinations and age regression. Thus, Weitzenhoffer and Hilgard devised the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer and Hilgard, 1962), which offers a better representation of difficult suggestions. The SHSS:C has been highly influential in research and has come to be regarded as the gold standard of hypnosis scales (Kihlstrom, Chapter 2, this volume).

On each of these instruments—the SHSS:A, SHSS:B and SHSS:C—the obtained score represents a single overall summary of the subject's level of hypnotizability. In contrast, it is possible to conceptualize hypnotic performance in terms of multiple, distinguishable, more specific abilities. In recognition of this possibility, Weitzenhoffer and Hilgard devised the Stanford Profile Scales, Forms I and II (SPS; Weitzenhoffer and Hilgard, 1963; revised in 1967). The two complementary forms of the SPS consist of quite difficult test suggestions, with each item scored on a graded basis from 0 to 3. Together with the SHSS:A, the SPS can be used to generate scores on six subscales: (1) Agnosia; (2) Positive Hallucinations; (3) Negative Hallucinations; (4) Dreams and Regression; (5) Amnesia and Post-hypnotic Compulsion; and (6) Loss of Motor Control. These six scores yield an ability profile for each subject. Despite the intriguing possibilities of this scheme, the SPS has had almost no impact on subsequent hypnosis research, unlike

the other Stanford hypnosis scales (McConkey and Barnier, 2004).

Subsequent hypnosis scale development has tended to be very closely modeled on the SHSS:A and SHSS:C. The most important further development was the adaptation of these individually administered scales to suit a group administration format, which allows for much greater efficiency in conducting research. Shor and Orne (1962) developed the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A), a very widely used group adaptation of the SHSS:A, and K. S. Bowers (1993, 1998) developed the Waterloo–Stanford Group Scale of Hypnotic Susceptibility, Form C (WSGC) as a group adaptation of the SHSS:C. Although the HGSHS:A can be used with quite large groups of subjects—say, one hundred or more—the WSGC is suitable only for much smaller groups—up to about a dozen. Generally, the psychometric properties of the Stanford hypnosis scales are preserved extremely well in these group adaptations, despite the format changes.

The SHSS:A and SHSS:C, as well as their group-administered versions, the HGSHS:A and WSGC, each consist of a dozen test suggestions and require roughly an hour to administer. Shorter hypnosis scales, which can be administered in less time, were devised for clinical applications. For example, the Stanford Hypnotic Clinical Scale, Adults (SHCS:A; Morgan and Hilgard, 1978–79a) consists of five test suggestions, and the Stanford Hypnotic Arm Levitation Induction and Test (SHALIT; Hilgard *et al.*, 1979a) consists of just one suggestion. These scales were developed in the hope that their brevity may encourage the use of hypnosis scales by clinicians in therapeutic settings. However, they verge on being too short psychometrically. Finally, the Carleton University Responsiveness to Suggestion Scale (CURSS; Spanos *et al.*, 1983) is a relatively short, research-oriented hypnosis scale, which consists of seven items designed for group administration.

For further information comparing these and other hypnosis scales, see Balthazard (1993), Barnier and McConkey (2004), McConkey and Barnier (2004), Perry *et al.* (1992), and Sheehan and McConkey (1982). What should be clear from this brief review, however, is the pivotal role of the Stanford scales, especially the

SHSS:A and SHSS:C, together with their group adaptations, the HGSHS:A and the WSGC. These hypnosis scales revolutionized the experimental investigation of hypnosis by providing a commonly accepted metric for use in laboratories around the world. Hence, we focus on these scales in our discussion of measurement in hypnosis.

10.1.1. How hypnosis scales are currently used in research

Barnier and McConkey (2004) surveyed the use of hypnosis scales in current research, as reflected in the 119 experimental and clinical articles published in the *International Journal of Clinical and Experimental Hypnosis* across the decade 1992–2001. Published laboratory research virtually always involved the use of hypnosis scales (98 percent of such articles), whereas a little less than half of published clinical research involved the use of hypnosis scales (46 percent of such articles). We will address reasons for this disparity a little later in this chapter. In the laboratory research articles, by far the predominant hypnosis scale was the HGSHS:A, which was used in 69 percent of such articles. In comparison, the SHSS:C was used in 29 percent of research articles, and the WSGC, in third place, was used in only 7 percent of such articles. (For reasons explained below, the SHSS:C and WSGC are often used together with the HGSHS:A.) In published clinical research, the measure of choice was clearly the SHCS:A; among the clinical articles that used a hypnosis scale, 64 percent used either the SHCS:A or its child adaptation, the Stanford Hypnotic Clinical Scale, Children (SHCS:C; Morgan and Hilgard, 1978–79b).

In clinical research, investigators typically look for a relationship between scores on a hypnosis scale, administered to every patient in a study, and measures of the clinical outcome. They can also examine whether scores on the hypnosis scale correlate with hypothesized mediating variables, to help confirm hypotheses about treatment mechanisms. In laboratory research, investigators can likewise administer a hypnosis scale to all participants and then look for correlations between scores on the hypnosis scale and various other measures, both within the

hypnotic circumstance (e.g. response to additional suggestions of special experimental relevance) and outside it (e.g. personality variables).

However, a more typical paradigm in laboratory research involves the use of one or more hypnosis scales to pre-select individuals for participation in a subsequent experiment. Commonly, the highest scorers (scoring, say, 9–12 on a 12-point hypnosis scale) are selected as the ‘high hypnotizable’ group and the lowest scorers (scoring, say, 0–3) as the ‘low hypnotizable’ group; a middle group can also be selected. If one hypnosis scale is used for such pre-selection, it is typically the HGSHS:A (the CURSS is the other hypnosis scale used in this stand-alone way). However, some hypnosis laboratories use a second hypnosis scale, following the HGSHS:A, to confirm hypnotizability levels prior to pre-selection for the subsequent experiment. The SHSS:C and the WSGC are the main hypnosis scales used in this way. Indeed, the manual for the WSGC clearly indicates that it is designed to be administered only following screening on the HGSHS:A. One advantage of double testing is that participants acquire more experience with hypnosis, and their performance can reach an asymptote or plateau prior to the subsequent experiment. In such double testing, the typical procedure is to administer the HGSHS:A in a large group setting, select out the highest and lowest scorers, retest only these participants on the SHSS:C (individually administered) or the WSGC (administered in groups of 3–12), and then use as the participants for a subsequent experiment only those people whose high or low hypnotizability status is confirmed by the second testing. This successive selection procedure has the advantage of avoiding laborious retesting on the SHSS:C or the WSGC for most of the initial sample (namely, all those screened out on the HGSHS:A). However, it also has some potential disadvantages, which we discuss later in this chapter when we consider some alternative, newer proposals for the use of hypnosis scales in research.

10.1.2. The central importance of hypnosis scales

Because the design of most modern hypnosis research is based on individual differences

as measured by hypnosis scales, these scales pervade our current conception of scientific hypnosis. Ken Bowers went even further than this. He saw the standardized hypnosis scales as the secure foundation on which the entire edifice of scientific hypnosis should be based. He proposed what the first author (Woody, 1997) has called the Bowers's Doctrine:

An effect is not a classic suggestion effect [that is, a genuine hypnotic effect] unless it is correlated with hypnotic ability as standardly assessed (K. S. Bowers, 1982, p. 6).

The idea is that individual differences, as measured by the standardized scales, should be the touchstone for true hypnotic phenomena. There are lots of experimental and treatment effects that we might be tempted to call hypnotic. But ones that turn out not to be associated with hypnotizability should be regarded as nonspecific effects, not part of the essence of hypnosis. In short, Bowers proposed that what is measured by the standardized scales is a valid, foundational trait.

However, this bold criterion is only sensible to the extent we believe we have achieved a generally unimpeachable standard for measuring hypnotic ability. It is interesting that toward the end of their careers, both Weitzenhoffer and Hilgard expressed some doubts that the Stanford scales had actually attained such a standard. In a searching retrospective on the Stanford scales, Weitzenhoffer (1997) clearly indicated his belief that these scales had been prematurely and somewhat inappropriately canonized. Later in this chapter we entertain a number of his reflections. However, to illustrate the depth of his reservations, consider that he became sharply critical of the use of easier items in the measurement of hypnotizability (see also Weitzenhoffer, 1980), and he argued that genuine hypnotizability ('somnambulism') is actually rare and quite distinct from the ability to respond to relatively easy suggestions. These are very surprising positions, if one recalls that a major innovation in the first Stanford scales, the SHSS:A and SHSS:B, was the inclusion of additional relatively easy items to generate a more normal distribution of scores.

Although Hilgard did not commit his reservations about the Stanford scales to print in a

similar way, he did express them clearly at various times in person. For example, at the convention of the Society for Clinical and Experimental Hypnosis in Tucson in 1990, Hilgard attended a lunch during which Ken Bowers expressed his great admiration for Hilgard's seminal work in the measurement of hypnotizability and the invention, with Weitzenhoffer, of the Stanford Scales. Hilgard's reaction was the following aside to the first author: 'The scales are not sacred. You should revise them! They were a starting point, not a revelation'. This statement is thoroughly consistent with Hilgard's tendency, throughout his publications on the Stanford scales, to discuss them as providing workable, provisional solutions to the underlying issues, rather than definitive answers (e.g. Hilgard, 1965, 1977).

Because virtually all hypnosis researchers use either the Stanford scales or their close derivatives throughout their work, these scales now tend to be taken for granted and fade into the realm of unexamined background assumptions. In contrast, our goal here is to re-examine the commonly used hypnosis scales with fresh eyes. In particular, we next revisit the crucial issues that were dealt with in their creation, and we highlight the ways in which they were provisionally resolved, but at the same time left unresolved in important respects. Given that these scales now serve as the foundation of scientific hypnosis, our guiding theme is that it is important to probe the possible weaknesses in this foundation.

10.2. Core concepts, questions and foundational research

10.2.1. Hypnosis scales as work-samples

Hypnosis scales take what is known as a *work-sample* approach to measurement. This is quite different from the typical strategy for measuring individual differences in psychology. Most measures in personality and social psychology involve asking people, in a quasi-hypothetical or reflective way, to tell us how they would respond or how they typically respond. For example, consider the Absorption Scale (Tellegen and

Atkinson, 1974), sometimes used to predict hypnotizability. One of its 34 items asks the respondent to consider whether: 'If I wish I can imagine my body is so heavy that I could not move it if I wanted to'. The measurement strategy is obviously indirect. Indeed, we might wonder on what basis people respond to such an item: Have they actually tried this recently, so they know the correct answer? Or do they simulate the experience in their mind so as to imagine how they might respond? Or do they simply make a snap associative judgment about whether the statement 'sounds like' them? In fact, we still do not really know much about what people do cognitively in order to respond to such items.

In contrast, work-sample instruments attempt, as far as possible, to recreate the actual circumstances of interest and elicit genuine samples of the behavior to be measured. For example, say we wanted to devise a work-sample instrument to assess managerial style. First, we would need to provide circumstances that create a managerial context—perhaps information about the company objectives and executive structure, a desk with an in-box and an out-box, and so forth. Note that it might be easier to create an appropriate context for people with managerial experience than for those without any such experience; those without experience may require more extensive information. Second, we would need to devise a series of appropriate challenges or tasks for the person being assessed. The point of these test problems is to elicit managerial behaviors. Third, we would need to decide what aspects to record of the behaviors elicited by each of these problems. These records need to capture what is important about the person's managerial style. And fourth, we would need to devise a set of rules for translating these records into statements about individual differences in managerial style.

As work-sample instruments, hypnosis scales involve these same four basic issues:

1. Creating an appropriate context: the hypnotic induction, and possibly related aspects of the situation, such as how the suggestions are delivered.
2. Providing appropriate tasks: the test items, which are suggestions for various experiences and behaviors.
3. Recording relevant aspects of the response: either the hypnotist's or subject's record of information about each response.
4. Translating the records into test output: scoring the test, and then making appropriate statements about individual differences.

Although these four basic issues about hypnosis scales may sound quite straightforward, each of them raises thorny and partly unresolved problems. We consider each of the four issues in turn.

10.2.2. Creating the context: the hypnotic induction

In work-sample instruments, it is very important to create the appropriate context for the behaviors to be sampled. First, many behaviors are only elicited in the appropriate contexts (an example would be sexual behavior); and, more generally, most traits express themselves only in particular relevant circumstances (Tellegen, 1981; Woody *et al.*, 1992). Second, what a person does in a particular context may be quite different from what he or she does in other circumstances. For our managerial candidates, how a person behaves in a position of authority at work may be quite different from his or her behavior towards his family at home.

In hypnosis scales, there are a variety of ways to create the appropriate context, such as introductory remarks by the hypnotist. But the main contributor by far is the hypnotic induction. Often quite extended, the induction serves as a transition from everyday circumstances to the relatively unusual circumstance of hypnosis.

There is an astonishingly wide variety of hypnotic inductions in use by hypnotists. However, there are two very different positions about how to regard this tremendous variety. The working assumption of most researchers was expressed clearly by Weitzenhoffer (1997), who made the following remark about degree of hypnotic responsiveness:

In 1957 [when the Stanford scales were first being developed] this degree was conceived, and still is, as being an intrinsic property of hypnosis that does not depend for its existence and properties on the mode of induction (p. 131).

In short, researchers have tended to view the details of the induction as generally not very important. For example, an induction can contain instructions for muscle relaxation and slow breathing, or instructions for the opposite: namely, strong physical exertion, such as riding a stationary bicycle (Bányai and Hilgard, 1976)—it does not matter. Similarly, the induction can be direct or indirect without affecting subsequent responses much (Lynn *et al.*, 1993; Robin *et al.*, 2005). Indeed, there do not seem to be any particularly essential properties of a hypnotic induction, aside from its plausibility for the subject. Likewise, although the induction can, of course, be delivered by a live hypnotist, it can also be administered effectively by audiotape or from the speakers of a computer (Grant and Nash, 1995)—it does not matter. Finally, in at least some circumstances, a formal hypnotic induction can be omitted altogether. K. S. Bowers argued that reasonably practiced subjects may not need any formal induction; instead, they can simply be given a brief period in which to prepare themselves, signaling when they are ready to proceed (Woody *et al.*, 1992). More generally, in an attempt to demystify the hypnotic induction, Nash (2005) argued that, aside from the obvious need for a brief preamble of, say, three short sentences, the induction is actually ‘nothing more or less than the first suggestion administered’ (p. 272).

In contrast, clinicians tend to see the wide variety of possible inductions not as trivial variants, but as important distinctions. The central idea is tailoring: the type of induction used needs to be matched to the kind of individual being hypnotized. Workshops at hypnosis conventions often focus on identifying which particular style of induction is needed to ‘unlock’ the responsiveness of any particular subject, and there are many articles (e.g. J. Barber, 1991) and books (e.g. Barabasz and Watkins, 2005) on the topic.

These two perspectives represent virtually incompatible world views. Researchers, adopting some form of the Bowers’s Doctrine, wish fervently that clinicians would habitually use standardized hypnosis scales to verify that the effects being studied are truly hypnotic. Without this simple step, researchers are doubtful that the science of hypnosis can make much progress. Clinicians, meanwhile, tend not to see the

relevance of a standardized scale, because all a standardized scale can tell them is how a subject might respond if the hypnotist used that particular style of induction; i.e. the subject might be much more responsive with some other type of induction better matched to the individual’s needs. Indeed, a relatively low score on a standardized hypnosis scale can seem clinically counterproductive: it starts the subject off with a failure experience and, instead of offering a solution (such as another approach to the induction), it simply attributes low responsiveness to the subject in a circular manner (the subject was not hypnotically susceptible because he or she is low in the trait of hypnotic susceptibility).

Clinicians may tend to think that what researchers are studying with their stock inductions—the same for everybody—has little to do with the clinical enterprise of hypnosis. However, the research implications of the tailoring concept are daunting. There would be many types of subject crossed with many types of induction, yielding many cells and low power. In addition, the assessment of the subject characteristics would need to be kept separate from the measurement of responsiveness, so that the hypnotist is blind and does not inadvertently contaminate the results (e.g. by exuding greater confidence in some conditions).

Although many details of the induction may not be very important (at least to researchers), the induction (including any introductory remarks) may still serve as a major source of information for the subject about the typically unfamiliar, relatively special and unusual context of hypnosis. To return to our work-sample context theme, such information may be important because people may try to enact subsequent test items in ways that are consistent with whatever the hypnotist told them in the induction. For example, if the induction implies that hypnosis is about using one’s imagination, they may attempt to enact suggestions using imagination; whereas, if the induction implies that hypnosis is about changing one’s focus of attention, they may enact suggestions by manipulating their attention. Consistent with this general line of reasoning, Comey and Kirsch (1999) found that changes in wording at the beginning of the CURSS had striking and somewhat

counter-intuitive effects on subsequent responses to the test suggestions.

What, then, does the induction tell the subject about the nature of the hypnotic circumstance? The Stanford scales and their derivatives all employ essentially the same hypnotic induction. The content of this induction is sometimes characterized incorrectly. The definition of hypnosis by Division 30 of the American Psychological Association (Green *et al.*, 2005; see also Woody and Sadler, 2005a) states that the hypnotic induction is ‘an extended initial suggestion for using one’s imagination’ (p. 262). However, the typical Stanford-derived induction, as used in hypnosis research around the world, never alludes to imagination. Instead, it very clearly informs the subject that hypnosis is a circumstance in which an unusually narrow focus of attention is appropriate, and it gives some instructions to help foster such a shift of attention—for example, focusing on a single spot on one’s hand, paying attention to nothing else but the hypnotist’s voice, and so on. Even the illustrative examples embedded in the induction clearly refer to focused attention, not using one’s imagination:

[Hypnosis] is merely a state of strong interest in some particular thing. In a sense you are hypnotized whenever you see a good show and you forget that you are part of the audience, but instead feel you are part of the story (Weitzenhoffer and Hilgard, 1959, p. 13).

Second, the Stanford-style induction suggests that the subject is entering a different state, a state of hypnosis. For example, there are frequent allusions to ‘sleep’, which serves as an analogous state change that people are already very familiar with. Whether a subject actually responds to the state-shift suggestion (e.g. ‘Deeply hypnotized!’) and experiences a state change is not scored in the Stanford scales and their derivatives, which generally do not inquire about such subjective experience.

Although such details of the induction may not affect gross behavior much—as indexed, for example, by pass rates on particular items—they may have subtler effects on how subjects approach the task of responding to suggestions—as indexed, for example, by patterns of correlations among items, or by accompanying

subjective experiences. Later in this chapter, we present some recent research that supports this idea.

10.2.3. Providing appropriate tasks: the test items

The second basic issue in a work-sample instrument is providing appropriate tasks. In hypnosis scales, these tasks or test items are suggestions for various behaviors and experiences. The items of any test have three important characteristics: difficulty level, type of content and degree of freedom from the recruitment of extraneous influences.

10.2.3.1. Difficulty level

In a retrospective account of the creation of the Stanford scales, Weitzenhoffer (1997) made the following interesting observation:

The items used with the SHSS:C, as well as SHSS:A and SHSS:B, were all chosen with the idea of having items that could be said to be of different levels of difficulty. ... Content was not a consideration in making the choices (p. 134).

If we assume for the moment that content differences can be safely ignored, a well-constructed scale would consist of test items of graded difficulty levels, forming a performance ladder. We can represent the idea of such a performance ladder on a graph (see Figure 10.1). On the *x*-axis is underlying hypnotic ability, and on the *y*-axis is the probability of passing any particular item. Each item is represented by an S-shaped curve, the sharply rising part of which indicates the range of ability for which that item discriminates well. The easiest item is at the left, and the hardest item is at the right. People with the lowest level of ability, marked X_1 , are unlikely to pass any items; people with a slightly higher level of ability, marked X_2 , are likely to pass only the easiest item; people with the next highest level of ability, marked X_3 , are likely to pass only the two easiest items; and so forth. In short, item difficulty provides a way of mapping ability levels. A missing rung on the ladder would indicate a gap in the discrimination of the relevant zone in ability level.

In addition, the ladder needs to start somewhere and stop somewhere, representing the

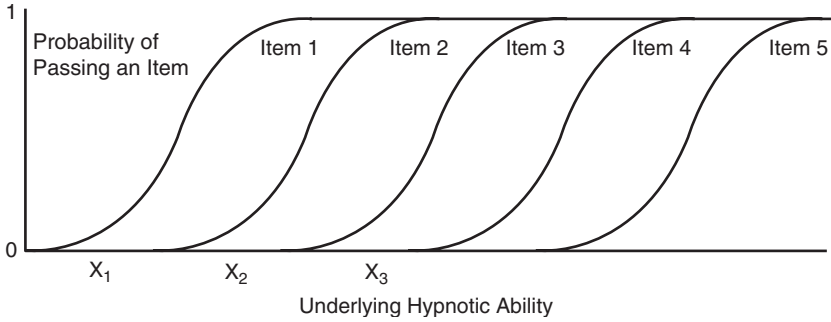


Fig. 10.1 The performance ladder.

range of ability levels to be assessed. One enduring legacy of the Stanford scales is a comparatively large proportion of easy items and a comparatively small proportion of difficult items (aside from the SPS, which has received almost no use); i.e. the performance ladder lies to the left of where it might otherwise be. This is especially true of the SHSS:A and thus its group adaptation, the HGSHS:A, which, as noted earlier, is by far the most commonly used hypnosis scale. Some critics argue that this emphasis on easy items has tended to focus hypnosis research on a relatively uninteresting range of ability levels (e.g. Kallio and Revonsuo, 2003; see also Woody and Sadler, 2005b).

10.2.3.2. Type of content

Items of hypnosis scales differ strikingly in the kinds of things they ask subjects to do. Variety of item content is a double-edged sword. If items of different content all tap a common underlying ability, then the variety of content should improve the generalizability of the scale. This is because the effects of content-specific irrelevant influences are minimized. However, if items of different content tap distinct underlying abilities (or underlying processes), then the resulting instrument may muddle important distinctions.

We can show this idea in somewhat simplified form (see Figure 10.2). Performance on each of three test items is portrayed as the result of two influences, a general ability common to all three test items, and a specific ability unique to each item. Consider the sum of the three items as the test score. If for all the items the contribution of the general ability is large and the specific ability small, then the sum measures the general ability well and minimizes the contribution of the specific factors (which do not repeat across items). If, on the other hand, for all the items the contribution of the general ability is small and the specific abilities large, then the sum represents a mishmash of distinct abilities A, B and C. Note also that if the items do not share a substantial general ability, then a performance ladder is problematic because, in effect, the separate rungs actually belong to different ladders (i.e. ladders A, B and C).

In the Stanford scales and their derivatives, item difficulty and item content are confounded. To illustrate this problem, imagine that we were to devise a 12-item intelligence scale from Wechsler items as follows: we take the easiest four items from one subtest, four moderately difficult items from a second subtest and the four hardest items from a third subtest.

| | | |
|---------------------------|---|--|
| Performance on Item #1 | = | General Ability + Specific Ability A |
| Performance on Item #2 | = | General Ability + Specific Ability B |
| Performance on Item #3 | = | General Ability + Specific Ability C |
| Sum of Items #1 + #2 + #3 | = | 3(General Ability) + Ability A + Ability B + Ability C |

Fig. 10.2 Content effects on summed scores.

These make up the 12 items of our intelligence test. This would yield an analog of the hypnosis scales, in that difficulty and content would be thoroughly confounded. In hypnosis scales, the easiest items are direct motor suggestions (such as the suggestion that one's arm is becoming heavier and lowering), the moderate items are motor challenge suggestions (such as the suggestion that when one tries, one may be unable to pull apart one's tightly interlocked fingers) and the difficult items are perceptual-cognitive suggestions (such as the suggestion a mosquito is present, when it is not actually there).

Because of this confounding of difficulty with content, it has been very hard to tell, with techniques such as factor analysis, to what extent the various kinds of content may elicit distinguishable underlying abilities (Balthazard and Woody, 1985). Given the potential importance of multiple underlying abilities, however, a number of researchers, including Hilgard (1965), Tellegen and Atkinson (1976) and Kihlstrom (2001), have devised some clever data-analytic ways to try to overcome this confound. These approaches have yielded results generally suggestive of multiple underlying abilities, without being definitive with regard to what those abilities may be. We will address this problem in more detail in Section 10.3. However, it is important to point out that these approaches attempt to repair the damage of confounded items after the fact, in the data analysis. Another approach would be to attack the problem at its source by devising new items that directly overcome the confound—for example, by adding to the existing items of hypnosis scales new direct motor items that are relatively difficult and new perceptual-cognitive items that are relatively easy.

10.2.3.3. Freedom from recruitment of extraneous influences

Let's quote again from Weitzenhoffer (1997):

When the scales were developed, there existed a widespread practice of simply explicitly describing to the presumably hypnotized individual what effect was desired, and then of accepting as a valid hypnotic response *any response* overtly compatible with the content of the intended suggestion. This notion and practice were naively and matter-of-factly adopted by us (p. 130).

One interesting implication of this passage is that test items may invite responses that are produced through processes that have little to do with hypnosis *per se*. Although this issue has long been of concern (e.g. Tellegen, 1978/1979; Balthazard and Woody, 1985), it rarely has been investigated. Some items may be more problematic than others. Woody *et al.* (1997) found that nonhypnotic suggestibility was somewhat related to performance on the easiest hypnosis scale items, such as direct motor suggestions, but its contribution dropped off sharply as the difficulty of the items increased, becoming negligible for the perceptual-cognitive suggestions.

There is another interesting implication of this passage from Weitzenhoffer. Unlike most ability scales in psychology, most items of hypnosis scales inform the subject what the desired response is. Woody *et al.* (1992) likened this situation to a test of mathematical ability 'in which people are given the correct answers to problems, and then asked whether they can solve them' (p. 15). Fortunately, there is fairly compelling evidence that hypnotic subjects are not simply faking or lying (e.g. Kinnunen *et al.*, 1994). However, the obvious quality of hypnotic suggestions could recruit other, subtler extraneous factors.

Avoiding this problem seems to require the use of suggestions that are at least somewhat deceptive (Woody and Sadler, 2005*b*). Kallio and Revonsuo (2003, p. 129) contrasted the usual hypnotic suggestions, which function as invitations, with the possibility of deceptive suggestions:

When given a suggestion, the subject is invited to imagine some alternative state of affairs This view implies that the subject is not being deceived or led to believe that such a state of affairs really is the case. By contrast, a deceptive suggestion would aim at convincing the person that the state of affairs described in the suggestion actually holds, i.e. that the world is different from what it actually is. A deceptive suggestion aims at bringing about a true hallucination rather than just ordinary mental imagery.

In a related way, Tellegen (1978/1979) maintained that even vividly imagined events that are not experienced as real fail to meet the minimal definition of hypnotizability; instead,

‘it is the *act* of positing something imagined as real that characterizes a response as hypnotic rather than the *content* of the imagined event’ (p. 220).

A useful illustration of a deceptive suggestion is the hallucination suggestion used by Szechtman *et al.* (1998). After a hypnotic induction, subjects expected that on some trials they would hear a taped auditory message whereas on other trials they would be asked to imagine it. However, on two trials, when they were told the taped message would be played again, it actually was not. In these hallucination trials, some high hypnotizables, namely those pre-screened as relatively poor hallucinators, heard nothing; indeed, some of them kindly pointed out later that the equipment may not have been working properly. Low hypnotizables also heard nothing. In contrast, high hypnotizables pre-screened as good hallucinators believed they heard the nonexistent message and rated it—for example, on clarity—the same as if it had actually been present. In addition, their patterns of brain activation were clearly different from those trials for which they were asked to imagine the message.

For the most part, hypnosis scales avoid this deceptive type of item (but see the hallucinated voice and negative visual hallucination items of the SHSS:C and the music hallucination, hallucinated light, heat hallucination, hallucinated ammonia and missing watch hand items on the SPS:I and II), the use of which would help to ensure that a response is truly hypnotic, rather than due to extraneous factors, such as high motivation. Because they are deceptive, such suggestions raise ethical issues that need to be handled carefully. Nonetheless, deceptive suggestions are a fascinating possibility for hypnosis scales, and we will take up this topic again in Section 10.3 on relevant current research.

10.2.4. Recording relevant aspects of the response

The third basic issue in a work-sample instrument is deciding which aspects to record of the subject’s behavior. The Stanford scales and their derivatives focus purely on observable behaviors in response to the test items. For a few items, the behaviors of interest are verbal (e.g. the dream,

hallucinated voice and negative visual hallucination items of the SHSS:C, as well as all post-hypnotic amnesia items). For most items, the behaviors of interest are motor. These overt behaviors can be recorded by the hypnotist in individually administered scales, or by the subject at the conclusion of the hypnosis in group scales such as the HGSHS:A. Although, compared with observer ratings, subjects’ self-reports have some interesting imperfections, such as the inability to recall some of the suggestions, the defects are not serious enough to challenge the overall validity of the HGSHS:A (Younger *et al.*, 2005).

In these scales, each item is scored according to a dichotomous criterion, even though the behavioral response is reasonably continuous in nature. For example, in response to the arm immobilization suggestion, the response is scored as a pass if the hand and arm did not lift by at least 1 inch, and as a fail if they lifted by an inch or more. Obviously, such cut-off points might discard some information about the extent of the response. In addition, dichotomous items are more challenging as grist for psychometric work, such as factor analysis; we return to this issue shortly.

The focus of the Stanford scales solely on observable behaviors could be viewed as rather odd and perhaps limiting, because there is wide consensus that the most important effects of hypnosis are on subjective experience, rather than observable behavior *per se*. For example, Orne (1972) remarked that the ‘hallmark of the hypnotic phenomena ... is the nature and quality of the concomitant subjective events’ (p. 421). Although later researchers have sometimes supplemented the Stanford-style scales by adding on measures of subjective experience, these subjective experiences have rarely been made an integral part of the measurement of hypnotizability.

Weitzenhoffer (1997) himself eventually came to regard the solely behavioral criteria of the Stanford scales as a mistake. He argued that the essential characteristic of hypnotic responding, what he called the ‘classic suggestion effect’ (Weitzenhoffer, 1974, 1980), necessarily involves a certain subjective experience. Namely, as the subject carries out a suggestion from the hypnotist, the subjective experience is that the behavior

is just happening of itself, extra-volitionally. For example, if the suggestion is that the subject's arm is rigid, the classic hypnotic experience is that one's arm has really become rigid, on its own; it is not that one is holding one's arm stiffly. This phenomenon is also referred to as 'hypnotic involuntariness', denoting individuals' experience that their behavior happened independently of any intention or effort on their part. Weitzenhoffer argued that information about subjective experience is necessary, in addition to behavioral data, to assess whether the classic suggestion effect actually occurred or not.

In response to Weitzenhoffer's argument, K. S. Bowers (1981) investigated the relationship between behavioral responses to items and the concurrent subjective experience of involuntariness. Although acknowledging that the two phenomena are imperfectly related, he argued that the correlation of subjective experience of involuntariness with behavioral response is strong enough that behavior alone serves as an adequate indicator of the classic suggestion effect in hypnosis scales.

Later research has more fully examined the mismatches between behavioral response and subjective experience (e.g. Spanos *et al.*, 1983; McConkey *et al.*, 1999); some newer developments in this work are described in Section 10.3. More generally, measurement of various aspects of subjective response in hypnosis is an attractive option, in part because it ought to provide important information about possible individual differences in underlying processes. However, there are many different aspects of subjective experience that might be measured, and many possibilities for how to proceed (Sheehan and McConkey, 1982). For example, to supplement the behavioral record, there are experiential response formats for use with some hypnosis scales, in which the subject makes one experiential rating for each test item (e.g. for the HGSHS:A, Kirsch *et al.*, 1990; for the WSGC, Kirsch *et al.*, 1998; and for the CURSS, Spanos *et al.*, 1986). Consider, however, that we might ask whether the response was experienced as voluntary versus involuntary, or as deliberate versus automatic, or as effortful versus effortless. These qualities may be related, but they are not the same (P. Bowers, 1978, 1982, 1982/1983; P. Bowers *et al.*, 1988).

Other ways of trying to tap individual differences in the subjective experience of hypnosis take a more general approach, not yoked to individual items. For instance, overall subjective depth can be measured (Field, 1965), as can archaic involvement (Nash and Spinler, 1989). Pekala and his colleagues have devised the Phenomenology of Consciousness Inventory (Pekala, 1991), a multidimensional subjective experience inventory that can be used with hypnosis. It indexes five kinds of subjective experience that can occur during an otherwise unoccupied period under hypnosis: dissociative control; positive affect; negative affect; visual imagery; and attention to internal processes (Kumar *et al.*, 1996).

But do differences in subjective experience have causal (mediational) significance or are they simply epiphenomenal concomitants (e.g. Hargadon *et al.*, 1995)? Although subjective experience is an essential aspect of hypnotic responsiveness, teasing out its role is considerably more complicated than simply relying on behavioral anchors as indicators of responsiveness (for further discussions, see Woody and McConkey, 2003; McConkey and Barnier, 2004).

10.2.5. Scoring the test: what does it tell us about individual differences?

The last of our four basic issues concerns ways of scoring a test to derive inferences about the individual differences at work. The Stanford hypnosis scales and their derivatives have 12 scorable items; some other hypnosis scales have fewer (e.g. the SHCS:A). In psychology, the typical way to score such a relatively short scale is simply to sum the number of passed items. We can collect normative data and describe the performance of each individual accordingly. In keeping with the concept of a performance ladder, ideally these summed scores yield a range of values that finely discriminate individual differences in the underlying ability being tapped. As mentioned earlier, the more the capacities being measured are unitary or unidimensional, the more sense the resulting performance ladder makes.

Consider, however, that for 12 pass-fail items, there are 4096 different possible response patterns. But there are just 13 possible scores

obtained from summing the 12 items, i.e. summed scores of 0, 1, 2, and so on, up through 12. Likewise, consider that there are 495 ways to obtain a total score of 8. Do some of these patterns contain useful information for distinguishing among those who got the same total score?

One way to try to capture more information from a scale is to derive separate subscale scores on a set of distinguishable component abilities. This possibility raises a number of questions: What should the components be? How are they related to general hypnotizability? Are such components useful, beyond general hypnotizability, for the prediction of other hypnotic behavior? We will address these issues in the next section in some detail. Another possible way to score a hypnosis scale is to use it to try to detect discrete types of subjects (rather than continuous dimensions, as with the subscale approach). There are several ways of conceptualizing such types and difficult methodological problems in detecting them (Balthazard and Woody, 1989; Oakman and Woody, 1996; McConkey and Barnier, 2004)

A classical issue in the science of hypnosis has been the possibility of a very-high type—the so-called ‘hypnotic virtuoso’—who is discontinuously different in ability level from other subjects (e.g. Woody and Sadler, 2005*b*). Another kind of typology would be a set of types distinguishable according to underlying process, rather than ability level *per se* (e.g. Sheehan and McConkey, 1982; McConkey *et al.*, 1989; McConkey and Barnier, 2004). For example, T. X. Barber (1999) proposed that there are three different types of successful responders to hypnosis: those whose hypnotic responses are chiefly due to their high motivation and positive set; those who are fantasy-prone and use imaginative processes in hypnosis; and those for whom hypnosis unleashes dissociative and amnesic effects. Some hypnotic suggestions may be passable by any of such alternative underlying processes; these items would not normally be useful for process distinctions. However, other suggestions may favor one process over another; thus, response patterns across items might possibly provide an empirical basis for a process

typology. This is a possibility that has provoked speculation but little consistent empirical work (in spite of the development of the Stanford Profile Scales to index performance and process differences within high hypnotizability levels).

10.2.6. Summary of partly unresolved problems

Here is a summary of the outstanding problems we noted for each of the four basic issues:

Creating an appropriate context:

1. How can we resolve the tension between standardized inductions and the vast range of clinically tailored ones?
2. What role does the induction have in giving the subject information about appropriate ways to respond?

Providing appropriate tasks:

3. Can the confounding of difficulty level and types of content be overcome?
4. Do items of different content tap, at least to some extent, distinct component abilities?
5. Do existing scales cover the most useful or relevant range of ability levels, and do they sample all of the useful or relevant range of item content?
6. Does the transparent nature of hypnosis scale items invite artifacts? Would alternative types of items better overcome these artifacts?

Recording aspects of the response:

7. Should behavioral scoring be supplemented by experiential measures? If so, which of the many possibilities might be most useful?
8. Can experiential measures be used to distinguish between alternative underlying mechanisms (e.g. different ways to pass the same item)?

Translating test responses into inferences about individual differences:

9. Do response patterns contain additional information beyond what is captured by the total score? What is the nature of this additional information, and how does it relate to general hypnotizability? Finally, is it useful for predicting other hypnotic phenomena?

10. Are there discrete types of responding, based on either ability level or process (or both)? Are patterns of item response indicative of such types?

10.3. Relevant current research

Definite answers to these questions remain elusive. However, some of our recent research sheds important new light on them. Because the questions are inter-related in fairly complex ways, they are best approached in a somewhat different order from this list. However, eventually we will have something to say about all 10 problem areas, thus illustrating how each can be approached in fresh ways.

10.3.1. Differentiating the building blocks of hypnotic response

We begin with problem #3. Can the confounding of difficulty level and types of content be overcome? With pass-fail items, like those on the Stanford scales and their derivatives, techniques such as factor analysis can readily yield factors that are artifacts of item difficulty. For example, the easiest items on a scale may all load on their own factor, irrespective of their underlying content. Some years ago, Balthazard and Woody (1985) pointed out that, partly due to this complication, just about every conceivable conclusion had been reached by different researchers looking into the structure of hypnosis scales. Hence, clear conclusions remained elusive concerning problem #4: Do items of different content tap, at least to some extent, distinct component abilities?

As mentioned earlier, over the years, the prospect of data-analytic ways to overcome this problem has attracted a number of researchers (e.g. Hilgard, 1965; Tellegen and Atkinson, 1976; Kihlstrom, 2001). More recently, Sadler and Woody (2004) took a different approach to this problem by using a special factor-analytic technique, based on item response theory (IRT), devised specifically for use with pass-fail items (TESTFACT; Wilson *et al.*, 1991). This technique is very effective in avoiding difficulty artifacts. The resulting factors should, therefore, more clearly reveal genuine content distinctions of possible relevance to distinct component abilities.

However, another somewhat frustrating limitation of hypnosis scales for such work is that the content sampling of each scale tends to be quite unbalanced. In particular, the HGSHS:A has a good representation of direct motor and motor challenge items, but a poor representation of perceptual-cognitive items. In contrast, the SHSS:C has a good representation of items of the perceptual-cognitive type, such as hallucinations, but a poor representation of direct motor and motor challenge items.

Therefore, Woody *et al.* (2005) examined the combined item pool of both these tests, the HGSHS:A and the SHSS:C. As mentioned earlier, usually researchers who use these two instruments first test participants on the HGSHS:A, select out the highest and lowest scorers, and retest only these individuals on the SHSS:C. The selection creates an artificially bimodal distribution of scores that would obscure issues of factor structure. Instead, this study used a data pool of over 600 subjects who had completed both instruments with no selection. To these data we applied the same special factor-analytic technique as Sadler and Woody (2004) used with just the HGSHS:A. The goal was to uncover distinguishable component abilities, or building blocks, underlying hypnotic response, in a fashion clearly not confounded by item difficulty.

Our results were broadly consistent with earlier work suggesting a number of distinguishable component abilities. Specifically, we obtained a four-factor solution with well-defined Direct Motor, Motor Challenge, Perceptual-Cognitive and Post-hypnotic Amnesia dimensions. For the most part, each item loaded cleanly on just one of these four factors. However, some items seemed to elicit two or more relevant abilities. For example, the mosquito hallucination item on the SHSS:C drew on both the Perceptual-Cognitive and Direct Motor dimensions. This is perhaps not surprising, since the item involves both a suggested hallucination (hearing the fly) and a suggested motor response (swatting it away).

In summary, the methodological and analytic approach taken by Woody *et al.* (2005) seems to succeed in resolving the confound between item difficulty and item content. In addition, it shows that the range of item content of the

HGSHS:A and the SHSS:C may tap four distinct component abilities.

This study also sheds some light on problem #5: Do existing scales cover the most useful or relevant range of ability levels, and do they sample all of the useful or relevant range of item content? By applying an IRT analysis (MULTILOG; Thissen, 1988) to individual subscales, Woody *et al.* (2005) generated information curves for the Direct Motor, Motor Challenge and Perceptual-Cognitive subscales. The curves showed that whereas the Motor Challenge subscale mainly discriminates in the mid-range of its underlying trait (trait levels near the population average), the Direct Motor subscale only discriminates well among quite low levels of its underlying trait (centered about a standard deviation below the population average). These results indicate that the inclusion of difficult direct-motor items would be particularly useful (e.g. automatic writing). The Perceptual-Cognitive subscale, in turn, mainly discriminates in the high range of its trait; thus, the invention of some relatively easy Perceptual-Cognitive items would also be useful. We also suggested that the addition of at least one further amnesia item, perhaps suggested amnesia for an autobiographical memory, would helpfully supplement the two existing items on the Post-hypnotic Amnesia subscale, which has only modest reliability. In short, this analysis of the combined item pool of the HGSHS:A and the SHSS:C tells us where the sampling of item difficulty and content is relatively comprehensive versus where it is relatively thin and merits supplementation.

10.3.2. Multivariate prediction using subscales

We next address problem #9, which consists of three closely related questions about the individual differences tapped by hypnosis scales: Do response patterns contain additional information beyond what is captured by the total score? What is the nature of this additional information, and how does it relate to general hypnotizability? Finally, is it useful for predicting other hypnotic phenomena?

The four factors obtained by Woody *et al.* (2005)—Direct Motor, Motor Challenge, Perceptual-Cognitive and Post-hypnotic Amnesia—were moderately intercorrelated, in the 0.43–0.69 range. These correlations are

consistent with the presence of a single higher-order factor of general hypnotizability, which contributes important nonspecific variance to each of the four primary factors. Figure 10.3 depicts this hierarchical factor model. Each of the four primary factors is a combination of general hypnotizability, which it shares with all other primary factors, and a unique capacity, represented by the variables labeled with *U*. A confirmatory factor analysis positing this structure fit the data extremely well. Shown in the figure are the loadings (here, correlations) of each primary factor on the general factor and on its unique factor (the respective *U*). Thus, this model represents both the important connection of each primary factor to general hypnotizability and the important unique information captured by each primary factor.

On the basis of these results, Woody *et al.* (2005) devised a scoring scheme for the combined item pool of the two hypnosis scales, yielding four subscale scores, one for each of the obtained primary factors. The resulting subscales had acceptable internal consistency reliabilities (Cronbach's alpha), the higher ones being 0.86 for Motor Challenge and 0.79 for Perceptual-Cognitive, and the lower ones being 0.65 for Direct Motor and 0.58 for Post-hypnotic Amnesia. (The lower reliabilities for the latter two scales reinforce the argument made earlier that additional direct-motor and amnesia items would improve the item pool.) The four subscales were moderately correlated, in the 0.33–0.64 range, but clearly distinguishable. In particular, we were able to show that each subscale captures a healthy share of true-score variance unique to it.

Woody *et al.* (2005) then used these four subscales as simultaneous multivariate predictors of a range of other hypnotic phenomena (through multiple regression or logistic regression). The goal was to determine whether the subscales were differentially useful for predicting other hypnotic phenomena, beyond the hypnosis scales themselves. Across quite a number of hypnotic effects in experiments, the specific subscales were consistently successful predictors, beyond the predictability afforded by general hypnotizability.

For example, a study by Mallard and Bryant (2001) examined suggested color blindness. In a reanalysis of their data, Woody *et al.* (2005) found that the Perceptual-Cognitive subscale was a unique predictor of this effect, explaining

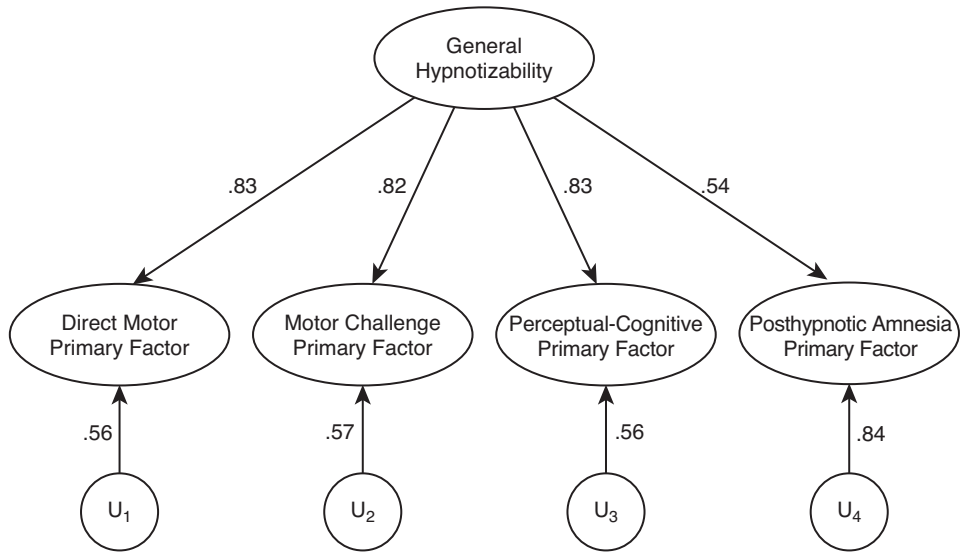


Fig. 10.3 Hierarchical factor model of hypnotizability. Results from 'Multiple hypnotizabilities: differentiating the building blocks of hypnotic performance', by E. Z. Woody, A. J. Barnier and K. M. McConkey (2005), *Psychological Assessment*, 17: 200–211. Reprinted by permission from the American Psychological Association.

16 percent of the variance. None of the other three subscales uniquely explained any of the variance in this study. This unique multivariate relationship indicates that the Perceptual-Cognitive subscale measures a basic building block that is important for enacting hypnotic suggestions of a hallucinatory type. The analysis also estimated the contribution of general hypnotizability, which explained about 25 percent of the variance in suggested color blindness.

In short, hypnosis scale items of different content do indeed tap distinct component abilities, and these component abilities, in turn, uniquely predict relevant hypnotic phenomena. At the same time, the four component abilities are strongly tied together by a higher-order factor of general hypnotizability, which contributes important nonspecific variance to virtually all hypnotic phenomena.

10.3.3. A window on discrete subtypes of responding

This picture is complicated somewhat by a serendipitous finding, which only became evident because the study by Woody *et al.* (2005) combined the items of two hypnosis scales. Although most of the items on the

HGSHS:A and SHSS:C are distinct, there is a small subset of items that are virtually identical across the two scales. We were watchful for the possibility that these pairs of same items would tend to form doublet factors, artifacts of having pairs of items that are unreasonably similar. Surprisingly, what actually happened was virtually the opposite.

Table 10.1 shows the factor loadings for these pairs of highly similar items from the two hypnosis scales. The HGSHS:A arm rigidity item loaded only on the Motor Challenge factor, whereas the very similar SHSS:C arm rigidity item loaded mainly on the Perceptual-Cognitive factor. Likewise, the pair of arm immobilization items demonstrated exactly the same pattern. Finally, consider the very similar HGSHS:A fly hallucination item and the SHSS:C mosquito hallucination item. The fly hallucination acted like a pure Direct Motor suggestion, whereas the mosquito hallucination had a clearer Perceptual-Cognitive aspect.

These results shed interesting light on problem #10: Are there discrete subtypes of responding? In particular, it appears that the same item can tap different processes, depending on the content of the preceding items. In the HGSHS:A, the arm immobilization and arm rigidity items are

preceded only by motor suggestions; in this context, they very clearly evoke motor challenge processes (as revealed by their factor loadings). In contrast, in the SHSS:C, these two items are preceded by and embedded among perceptual-cognitive suggestions; in this context, these same items tend to evoke perceptual-cognitive processes instead. Likewise, when an insect hallucination item is preceded by motor suggestions, as on the HGSHS:A, subjects' responding appears to draw almost purely on direct motor processes; whereas in the predominantly perceptual-cognitive SHSS:C, this item more clearly invokes perceptual-cognitive processes.

These sorts of carry-over effects make it somewhat harder to make sense of factor analysis. But, more importantly, they indicate that hypnotic subjects seem to have more than one way of enacting a suggestion, and their preceding experience affects which alternative subtype of responding they use (see also Barnier and McConkey, 2004; McConkey, Chapter 3, this volume).

Accordingly, these findings also shed some light on the hypnotic induction (problems #1 and #2). As Woody *et al.* (2005) pointed out, their results indicate that hypnotic subjects show a contextually sensitive flexibility, in which earlier suggestions may facilitate the use of some subskills and inhibit the use of other subskills in subjects' responses to subsequent suggestions. Thus, even if we follow Nash (2005) and view the induction simply as the initial suggestion or suggestions, this does not mean that the early phase of the session has no special impor-

tance, because it may affect the processes by which subjects enact later suggestions. It is possible that other information conveyed in the preamble and induction may influence the processes subsequently invoked, even if the effect on overt behavioral passing of items, averaged across all subjects, happens to be negligible.

10.3.4. Deceptive suggestions as potential innovations in scale items

When Weitzenhoffer and Hilgard devised the items of the Stanford scales, they mainly drew on a traditional realm of content for hypnotic suggestions that was already a century old. In addition, their selection of items for the SHSS:A, B and C was fairly conservative, avoiding the odder or bolder possibilities (Weitzenhoffer, 1997). One advantage of the resulting items is that they tend to be quite straightforward, requiring a minimum of specialized expertise and equipment. However, it is useful to consider more innovative items for measuring hypnotizability. Some might require a special set-up and apparatus, but these requirements would be easily met in most laboratories.

As mentioned earlier, one intriguing possibility for innovative scale items is deceptive suggestions. Such items would be a good way of addressing problem #6: Does the transparent nature of hypnosis scale items invite artifacts? Deceptive suggestions can be contrasted with one traditional way of addressing the possibility of artifacts: the real-simulating paradigm

Table 10.1 Loadings of highly similar pairs of items from the HGSHS:A and the SHSS:C on four promax-rotated factors. Results from 'Multiple hypnotizabilities: differentiating the building blocks of hypnotic performance', by E. Z. Woody, A. J. Barnier and K. M. McConkey (2005), *Psychological Assessment*, 17: 200–211. Reprinted by permission from the American Psychological Association.

| Item | Primary factors | | | |
|-------------------------------|----------------------|-----------------|--------------|---------------|
| | Perceptual-Cognitive | Motor Challenge | Direct Motor | Post-hypnotic |
| HGSHS:A Arm Rigidity | -0.02 | 0.99 | -0.16 | 0.06 |
| SHSS:C Arm Rigidity | 0.73 | 0.22 | 0.00 | -0.01 |
| HGSHS:A Arm Immobilization | 0.01 | 0.90 | -0.11 | 0.02 |
| SHSS:C Arm Immobilization | 0.68 | 0.32 | 0.02 | -0.15 |
| HGSHS:A Fly Hallucination | 0.11 | 0.06 | 0.68 | 0.05 |
| SHSS:C Mosquito Hallucination | 0.42 | -0.12 | 0.43 | 0.14 |

(Orne, 1959, 1972). In this paradigm, high and low hypnotizables are tested by a hypnotist blind to their ability level. High hypnotizables are tested in the usual way, but low hypnotizables are asked (by an independent experimenter prior to the hypnosis session) to simulate hypnosis. The use of simulating subjects sheds light on whether motivation, the hypnotist's instructions about the correct response and some knowledge of a genuinely hypnotized person's typical response are all that is needed to generate hypnotic behavior indistinguishable from that of real subjects (implying that these factors may be all that are needed to explain genuine hypnotic responding). Quite often, simulators closely mimic the real responses of highly hypnotizable subjects. This result is, of course, somewhat difficult to interpret, because we assume that simulators do not necessarily generate responses in the same way as highly hypnotizable people.

In contrast, deceptive suggestions deal with artifacts in the opposite way: an effective deceptive suggestion in some way obscures what the correct response is, so that such knowledge is unlikely to be a cause of the obtained responses. There would appear to be two ways to achieve this. First, the suggestion may be made in such a way that the suggested effect is plausibly attributed to an external, real factor that is actually absent. In the example mentioned earlier (Szechtman *et al.*, 1998), subjects associated the click of a tape machine being turned on with the onset of the recorded message. In the hallucination condition, they were told the machine would be turned on again and heard the click, but then no message was actually forthcoming. In these circumstances, some subjects heard the message, as real as real, and were apparently unaware that they were hallucinating; in contrast, most subjects heard nothing. A similar example comes from a study by Blakemore *et al.* (2003). Hypnotic subjects experienced their arm being moved by a pulley system. In the subsequent 'deluded passive movement' condition, they were told their arm was about to be moved again in the same way by the pulley system, but this time the pulley system was not used. Thus, any arm movement was actually initiated by the subject.

A second way to devise a deceptive suggestion is to manipulate reality through an unexpected external influence that is unknown to the subject.

Some years ago, Martin Orne developed a 'magic room' in which he subtly presented the precise images and effects he suggested to subjects. Drawing on early work by Perky (1910), Orne and McConkey (1981) argued that comparing reported images of suggested events with presented perceptual images provides a good test of the believed-in reality of the suggested hypnotic experience.

McConkey and his colleagues have used and extended Orne's technique extensively in their work. For instance, in one series of experiments, participants were given a small hollow metal ball to hold and they received a suggestion that either their hand or the ball itself would get hotter and hotter. Importantly, for half of the subjects the ball was filled with 1 g of calcium chloride and 2 ml of water. When these mixed, just as the hypnotist administered the suggestion, they reacted to heat the ball 7–10°C—in effect, to make the ball subtly warmer. Although for highly hypnotizable subjects given the 'chemical ball', the ball or their hand felt hotter more quickly than for those highs given an inert ball, highs' eventual experience of the suggested heat was essentially similar and all subjects attributed their experience to internal, cognitive processes rather than to external, manipulated factors (McConkey, 2001; see also McConkey, Chapter 3, this volume).

In a similar way, Bryant and Mallard (2003; see also Bryant and Mallard, 2005) gave high and low hypnotizables a hallucination suggestion to see a shape on the wall. For some trials, they simultaneously, but subtly, projected a visual image of the shape on the wall. Highs made comparable reality ratings for the hallucinated shape whether the projected image was absent or present. Together, these experiments suggest that for some, generally highly hypnotizable individuals, hypnotic suggestions can generate perceptual-cognitive experiences that seem 'as real as real.'

10.3.5. The monitoring and potential use of subjective experience

Another possible area for further development is the innovative use of subjective experience to measure and analyze hypnotizability (problems #7 and #8). As noted earlier, some investigators

have asked subjects to report on their ‘private’ experiences of hypnosis, but often only by rating the hypnosis session or individual items on various dimensions. This approach requires the individual to distill into a single number an extended and complex subjective experience. In contrast, Sheehan and McConkey (1982) developed the Experiential Analysis Technique (EAT; see also McConkey, 1991; Sheehan, 1991) to provide a comprehensive approach to the phenomenology of hypnosis. This technique allows researchers to focus in detail on the ways in which hypnotized individuals, both across and within hypnotizability levels, construct and display hypnotic effects.

The EAT typically involves an individual watching a videotape of their just-completed hypnotic session and commenting about their experience and behavior during that session to the ‘inquirer’, who is independent of the hypnotist. The inquirer probes the subject’s comments, asking about cognitions, images, expectancies, perceptions, emotions and behaviors during the hypnosis session. For instance, as the subject watches and listens to the hypnotist (on the video) giving a hallucination suggestion and then watches and listens as s/he (on the video) responds to it, the inquirer might ask: ‘What thoughts were in your mind as you were listening to this suggestion?’ ‘How did you go about having that experience?’ ‘What did you think the hypnotist was expecting from you at this time?’ After the EAT inquiry, subjects’ comments are rated, analyzed and compared with their behavioral responses.

The EAT has been used to explore many hypnotic phenomena, and the method has been evaluated and extended by many researchers (e.g. Sheehan *et al.*, 1978; Laurence and Perry, 1981; Bryant and McConkey, 1989; Banyai, 1991; West and Fellows, 1996; Barnier and McConkey, 1999; Bryant and Mallard, 2002). In general, findings from this research suggest that there is real diversity in how highly hypnotizable individuals approach, experience and respond to hypnotic suggestions. Sheehan and McConkey (1982; see also McConkey, 1991; Sheehan, 1991; McConkey and Barnier, 2004) argued that these differences are due, at least in part, to the different cognitive styles that high hypnotizables adopt when processing the communications

of the hypnotist. These differences, revealed by the EAT, suggest that in-depth analysis of subjective experience can help to reveal component processes in hypnotic responding.

However, the EAT and many other measures of subjective experience are retrospective; comments or ratings made after hypnosis may not reflect the actual experience of the individual. Assessing subjective experience concurrently with that experience is theoretically appealing, especially as a means to examine the concordance of experience with behavior, but it can be methodologically challenging. Two early attempts were made by Field (1965) and Evans and Orne (1965). Field adapted a finger-signaling method and asked subjects to move their hand in one direction along a 14 inch board marked off in 20 equal units when hypnotic depth increased, and in the other direction when it decreased. Evans and Orne asked subjects to measure their hypnotic depth by moving the hands of a clock around a large clock face with the numbers 1 (‘normal and alert’) to 10 (‘as deeply hypnotized as any person could become’). Both Field and Evans and Orne reported modest relationships between these ratings and behavioral response, as well as interesting associations between behavioral performance/success or nonperformance/failure and concurrent depth ratings.

Drawing on both this work and the advantages of computers, McConkey *et al.* (1999) developed and used a ‘dial’ method to index and track ongoing hypnotic experience across types of items (direct motor, motor challenge, perceptual-cognitive) and the time course of items (i.e. suggestion or onset phase, test phase and cancellation or offset phase). During hypnosis, subjects were asked to turn a dial to indicate changes in the strength of their experience of the hypnotically suggested item. The dial was connected to a computer that recorded the position of the pointer (i.e. rating of experience) every second across the three phases of each item.

McConkey *et al.* (1999) asked high, medium and low hypnotizables to use the dial across three different hypnotic items: arm levitation (direct motor), arm rigidity (motor challenge) and anosmia (perceptual-cognitive). Subjects’ dial ratings across the items were quite different: their ratings were higher—their experience was

stronger—for arm rigidity than for arm levitation or for anosmia. Subjects who passed the behavioral criterion for an item ‘dialed’ higher ratings for that item than subjects who failed the item. In other words, subjects’ experience, as measured by the dial, tended to match their behavior, as measured by each item’s specific criterion. However, whereas high hypnotizables passed the behavioral criteria for items more often than medium hypnotizables, the dial patterns of highs and mediums who responded looked very similar. McConkey *et al.* concluded that for mediums who respond, their experience is just as intense as the experience of highs; rather, mediums are simply limited in the range of suggestions to which they can respond.

Subjects’ dial ratings also changed across the phases of each item; these changes were different for different types of participants and for different types of items. For instance, both highs’ and mediums’ dial ratings went down—their experience became weaker—as the hypnotist canceled the arm rigidity suggestion. However, as the hypnotist canceled the anosmia suggestion, mediums’ rating again went down, but highs’ ratings went up. Since most of the highs passed anosmia, McConkey *et al.* (1999) suggested that highs’ positive experience during the test phase enhanced and encouraged the intensity of their subjective involvement and this intensity was not easily or quickly diminished even by an explicit cancelation from the hypnotist. Interestingly, the dial ratings suggested that some highs took longer to ‘turn off’ their hypnotic experience, which contrasted with the often very swift onset of the suggested experience.

In a more recent experiment, McConkey *et al.* (2001) used the dial to index the subjective experience of highly hypnotizable subjects who were given a hypnotic sex change suggestion or who were asked to imagine themselves as the opposite sex (see also Burn *et al.*, 2001). The dial ratings indicated that the experience of sex change came about much more quickly for hypnotic than for imagination subjects. McConkey *et al.* (2001) interpreted this difference as a function of the influence of hypnotic induction. A more important point for this discussion is that subjects’ quite different experiences of the onset of the suggestion were not revealed by

retrospective ratings of realism, involuntariness and active thinking; they would have been overlooked if not for the dial ratings.

Both the EAT and the dial method highlight the value of supplementing the sometimes blunt, behavioral indicators of hypnotizability measures with detailed subjective indicators. But work is needed to refine the most valuable subjective measures. Since current hypnotizability scales take significant time and personnel (especially if subjects are double tested), subjective procedures that would require substantially more time and personnel, such as the EAT, are perhaps best reserved for detailed investigations of hypnotic performance with selected subjects (in the same way that the Stanford Profile Scales were intended for selected subjects). However, a procedure such as the dial method is simple and straightforward to set up and use—any subject, whether tested individually or in a group, can potentially turn a dial connected to a computer and thus yield moment to moment, phase to phase, item to item ratings of their subjective experience. Of course, researchers would need to ensure that all subjects understand precisely what they are rating. Concepts such as involuntariness can be confusing for the subject or meaningless for some items (e.g. ones in which subjects may be unaware of their response, as in some post-hypnotic suggestions, or in which the dominant experience is the sense of reality rather than involuntariness, as in some hallucinations). Researchers need to be aware also of the possibility that the attentional load and/or physical demands of concurrent subjective methods, whether the dial, finger-signaling or verbal ratings, may intrude on and thus influence response to both the suggestion and the rating task (McConkey *et al.*, 1999).

10.4. Implications for hypnosis and future research directions

To conclude this chapter, we first advance general comments on possible ways of using the existing hypnosis scales. Then we discuss prospects for developing new and improved hypnosis scales. Because the laboratory and clinical uses of hypnosis scales are somewhat

different, we devote attention to each type of use.

10.4.1. Established and newer ways to use the existing hypnosis scales

As mentioned earlier, the typical design of laboratory research in hypnosis involves pre-screening possible participants on one or more hypnosis scales and selecting out high and low scorers as the contrasting groups to run in the main experiment. A major choice facing researchers is whether to base pre-selection on the HGSHS:A alone, or on the much more time-consuming (and expensive) procedure of the HGSHS:A followed by retesting of high and low scorers on either the SHSS:C or the WSGC.

The study by Woody *et al.* (2005), reviewed earlier, puts an interesting perspective on this choice. It should be recognized that the HGSHS:A is actually a very good measure of general hypnotizability. If a researcher selects scorers at the two ends of the distribution on this scale alone, the resulting high and low hypnotizability groups are likely to have very little overlap in underlying levels of general hypnotizability. Thus, to the extent that general hypnotizability predicts experimental phenomena, pre-selection on the HGSHS:A alone should work well. The potentially crucial shortcoming of this strategy of selecting on the basis of the HGSHS:A only, however, stems from its sampling of specific component abilities. The HGSHS:A does a good job of sampling only the first two of the four specific building blocks—direct motor and motor challenge, but not perceptual-cognitive and post-hypnotic amnesia. In two large data sets from different labs (Sadler and Woody, 2004; Woody *et al.*, 2005), the HGSHS:A clearly emerges as a very poor measure of perceptual-cognitive ability. In addition, its single post-hypnotic amnesia item is psychometrically weak and problematic (Sadler and Woody, 2004).

Because experimental research in hypnosis often focuses on perceptual-cognitive phenomena and amnesia, pre-selection on the HGSHS:A alone may be a poor choice in such studies. If it is possible to use only one hypnosis scale in such studies, it should arguably be either the WSGC or the SHSS:C. However, the HGSHS:A alone

might be a very good choice in experiments on motor behavior, because the SHSS:C adds relatively little information about direct motor and motor challenge abilities (as most probably does the WSGC).

An attractive alternative to these pre-selection paradigms is the multiple subscales approach, advocated earlier, which offers a way to get new information from the existing scales. The scoring for the four subscales used by Woody *et al.* (2005) is shown in Table 10.2. The use of these subscales requires not only that both the HGSHS:A and the SHSS:C be administered, but also that no pre-selection occurs (after administration of either the HGSHS:A or the SHSS:C). Because all such pre-tested subjects may then be used in the main study, this strategy does not involve the pre-testing of large numbers of people who are discarded for purposes of the main study (because, for example, they scored near the mean on the HGSHS:A). For any criterion variable, the four subscales can be used as simultaneous predictors in a multiple regression to distinguish the unique contribution of each of the component abilities. The use of such subscales can powerfully illuminate the underlying nature of complex hypnotic responses. For example, in a reanalysis of a study of post-hypnotic amnesia for autobiographical memory (Barnier *et al.*, 2004), Woody *et al.* (2005) found that different types of memory effects were differentially predicted by different subscales, creating a much richer picture of the underlying determinants of each aspect of response.

The main drawback of the multiple subscales approach is that the necessary lack of pre-selection limits the statistical power of this approach, compared with pre-selection paradigms. Hence, successful studies with the multiple subscales approach will require more ample numbers of participants. In essence, the extra information about the underlying building blocks of the performance under study comes at a price, which is the need for a larger n in the main study. The sample sizes used in the reanalyses reported in Woody *et al.* (2005) varied from 95 to 146; this range would be a good benchmark. If it is only possible to run a substantially smaller number of participants in the main experiment, then a pre-selection paradigm is likely to be a better bet.

Table 10.2 Scoring for component ability subscales based on the HGSHS:A and the SHSS:C.

Direct Motor subscale = SHSS:C hand lowering (#1) + hands apart (#2) + HGSHS:A head falling (#1) + eye closure (#2) + hand lowering (#3) + hands moving (#7).

Motor Challenge subscale = SHSS:C arm rigidity (#5) + arm immobilization (#8) + HGSHS:A arm immobilization (#4) + finger lock (#5) + arm rigidity (#6) + communication inhibition (#8) + eye catalepsy (#10).

Perceptual-Cognitive subscale = SHSS:C mosquito hallucination (#3) + taste hallucination (#4) + dream (#6) + age regression (#7) + anosmia to ammonia (#9) + negative visual hallucination (#11) + HGSHS:A fly hallucination (#9) + post-hypnotic suggestion (#11).

Post-hypnotic Amnesia subscale = 23 – SHSS:C post-hypnotic amnesia (#12, items recalled) – HGSHS:A post-hypnotic amnesia (#12, items recalled).

Results from 'Multiple hypnotizabilities: differentiating the building blocks of hypnotic performance', by E. Z. Woody, A. J. Barnier and K. M. McConkey (2005), *Psychological Assessment*, 17: 200–211. Reprinted by permission from the American Psychological Association.

Some hypnosis researchers use a conjoint criterion pre-selection strategy that, in effect, acknowledges a hierarchical model of hypnotizability; i.e. one combining both a higher-order factor of general hypnotizability and specific component abilities, but without attempting to measure all the specific abilities. For example, consider the pre-selection of 'high' and 'low' participants for a subsequent experimental study of amnesia. The experimenter may require that the 'high' participants not only score high on the HGSHS:A and the WSGC, but also that they pass the post-hypnotic amnesia items of both scales. Likewise, 'low' participants may be required not only to score low on the HGSHS:A and the WSGC, but also to fail the post-hypnotic amnesia items. This conjoint criterion filters the two contrasting groups at both the general hypnotizability and relevant specific ability levels. It does not attempt to measure the other three component abilities, or to characterize individual differences in a multivariate way; however, if the number of participants who can be run in the main experiment is limited, it may be a more powerful strategy than the multiple subscales approach (which does not allow pre-selection).

A closely related pre-selection strategy is the use of a tailored version of the SHSS:C (Hilgard *et al.*, 1979b), which allows the researcher to replace one of the original items with a special purpose item of particular relevance to the phenomenon to be studied. Typically, a conjoint criterion is then used to select participants for

the main experiment. However, if pre-selection of only high and low scorers on the HGSHS:A precedes administration of the SHSS:C, as is typically done, this strategy cannot provide measures of the four component abilities, nor does it measure the specific ability (with the single item) as reliably as the multiple subscales approach.

10.4.2. Some thoughts on the measurement of hypnotizability for clinical purposes

It is tempting to suggest that the multiple subscales approach might also serve as a sound basis for the tailoring of hypnotherapy to the client's particular strengths. However, the combination of the HGSHS:A and the SHSS:C may be much too long for many clinical purposes. There seems to be a consensus that for clinical scales of hypnotizability, brevity is paramount. Given this constraint, we would advocate a somewhat different kind of tailoring from that which clinicians often have in mind. Note that when researchers 'tailor' a hypnosis scale, they do so according to the particular research question, rather than the particular participant. Similarly, we would argue that any short clinical hypnosis scale should be tailored to the outcome to be predicted. Given that virtually any reasonable set of potential test items will measure general hypnotizability well, clinicians can choose a set of items all of which measure the hypothesized component abilities of relevance for the

treatment protocol. For example, in a clinical study of hypnotic pain analgesia, direct motor and motor challenge component abilities are likely to be irrelevant; hence, it would hardly make sense to administer the HGSHS:A. Indeed, the HGSHS:A could also be problematic because its early focus on motor phenomena might tend to facilitate less relevant processes as subjects respond to subsequent suggestions.

Looking toward the future, it may be that general purpose instruments are not what clinicians need. Instead, imagine a pool of items, grouped by component ability, from which clinicians could choose the appropriate instrument for the clinical task at hand. In this way, clinicians could avoid wasting time on assessing irrelevant component abilities and focus their assessment on the relevant ones. The idea that certain hypnotic phenomena can be best predicted by a fairly specific selection of screening items is strongly supported by the findings of Woody *et al.* (2005), reviewed earlier.

Again looking toward the future, another interesting possibility for focused clinical hypnosis scales would be to elicit the same suggested phenomenon more than once, each time asking the client to use a different specified process. An intriguing illustration of this possibility comes from a study by Hargadon (1993). All participants tried both of two kinds of hypnotic analgesia suggestions: ones prescribing imagery, and ones proscribing imagery. These two types of analgesia suggestions, averaging across all highly hypnotizable subjects, were equally effective, and both were much more effective than a no-suggestion control condition (see Hargadon *et al.*, 1995). In addition, traditional imagery measures, administered outside of hypnosis, did not predict which type of analgesia suggestion would be more effective for individuals. Hence, it would be tempting to conclude that the type of suggestion makes no difference. However, a subjective rating of how effortful versus effortless the subject found the imagery in the imagery-based hypnotic analgesia did clearly discriminate between the effectiveness of the two types of suggestion. Individuals who generated imagery effortlessly got significantly more pain reduction from the imagery-based analgesia suggestions than the nonimagery suggestions. In comparison, individuals who

generated imagery effortfully got significantly more pain reduction from the nonimagery analgesia suggestions than the imagery-based suggestions (Hargadon, 1993). In short, one can envision focused clinical scales that more directly address the question of which among several possible hypnotherapeutic approaches may be most promising for a particular client.

10.4.3. The prospect of devising new hypnosis scales

No matter how one would wish to describe the universe of possible hypnosis items, the existing hypnosis scales do a somewhat haphazard job of sampling from this universe. This limitation is not really very surprising, because—except for the Stanford Profile Scales, which have had almost no influence—content issues have not been a major concern in the construction of hypnosis scales. There are also more innovative possibilities for kinds of items and scoring schemes—developments that post-date the origins of the existing scales. Hence, it makes sense, in closing, to raise the prospect of devising new hypnosis scales.

One useful starting point is to consider the combined item pool of the HGSHS:A and the SHSS:C from the perspective of facet theory (Shye *et al.*, 1994), an experimental design-like approach to the construction of measures. As Table 10.3 shows, the two dozen items each fall fairly cleanly into one of the cells of a 2×2 matrix, for which the facets are direct versus challenge, and motor versus perceptual-cognitive. For instance, SHSS:C hand lowering falls into the Direct \times Motor cell because participants are directed to experience a specific motor action; HGSHS:A finger lock falls into the Challenge \times Motor cell because participants are told that their fingers are tightly interlocked and are then challenged to separate them (i.e. inhibition of a motor action); SHSS:C taste hallucination falls in the Direct \times Perceptual-Cognitive cell because participants are directed to experience a hallucinated taste; and SHSS:C post-hypnotic amnesia falls into the Challenge \times Perceptual-Cognitive cell because participants are told that they will not be able to recall the events of hypnosis and are then challenged to try (i.e. inhibition of a cognitive action). According to this scheme, the

HGSHS:A and SHSS:C item pool consists of seven direct motor items, seven motor challenge items, six direct perceptual-cognitive items and four perceptual-cognitive challenge items.

Re-examining the items in this way reveals several issues that could be addressed in future scale development. One is that there is a relative paucity of perceptual-cognitive challenge items, and the wording of their challenge is less explicit than for the corresponding motor items. Whereas in motor challenge items the subject is clearly told actively to challenge the reality of the suggested experience, this challenge is only implied in the perceptual-cognitive challenge items. It may be worthwhile to revise these items or invent new ones with a clearer challenge quality.

A more general problem is that direct versus challenge is confounded with the manner of responding to the items. For direct motor items, the subject generally must say or do something to pass; in contrast, in challenge items, the subject must fail to do or say something to pass (Sadler and Woody, 2004). This unfortunate confounding appears to be unnecessary, because challenge items that require a response for a pass are definitely possible—for example, the suggestion that a weight in the hand has become too heavy to hold up, yet the subject should try to keep it up (Woody *et al.*, 2005).

Further examination of the items may reveal other features of systematic importance (possibly

resulting in the addition of design elements, such as further facets). One potentially important feature is difficulty level, as discussed earlier. Another is the distinction between suggestions for responses during hypnosis versus suggestions for responses after hypnosis. There are only three post-hypnotic suggestions among the 24 items (marked with an asterisk in Table 10.3). These items fall unevenly in the four cells. Given the theoretical and clinical importance of post-hypnotic responding, a fuller sampling of post-hypnotic suggestions may be warranted (Woody *et al.*, 2005).

Although our discussion may not go far enough in pointing to a final design for a new scale, it illustrates the kinds of content sampling issues that must be addressed systematically. As discussed earlier in this chapter, further innovations that could be applied to the design of new hypnosis scales stem from other areas of hypnosis research, such as the study of deceptive suggestions and the nature of subjective experience in hypnosis. A final influence on future hypnosis scale development will be theoretical advances in hypnosis, because theory and measurement are interdependent (Woody, 1997).

Back in the 1950s, Weitzenhoffer and Hilgard made use of all the knowledge at that time in formulating their scales. Now, with updated knowledge about what there is within hypnosis

Table 10.3 HGSHS:A and SHSS:C items in the cells of a 2 × 2 matrix

| | Motor | Perceptual-cognitive |
|------------------|---|--|
| Direct | <ol style="list-style-type: none"> 1. HGSHS:A head falling 2. HGSHS:A eye closure 3. HGSHS:A hand lowering 4. HGSHS:A hands moving 5. HGSHS:A post-hypnotic suggestion* 6. SHSS:C hand lowering 7. SHSS:C hands apart | <ol style="list-style-type: none"> 1. HGSHS:A fly hallucination 2. SHSS:C mosquito hallucination 3. SHSS:C taste hallucination 4. SHSS:C dream 5. SHSS:C age regression 6. SHSS:C hallucinated voice |
| Challenge | <ol style="list-style-type: none"> 1. HGSHS:A arm immobilization 2. HGSHS:A finger lock 3. HGSHS:A arm rigidity 4. HGSHS:A communication inhibition 5. HGSHS:A eye catalepsy 6. SHSS:C arm rigidity 7. SHSS:C arm immobilization | <ol style="list-style-type: none"> 1. HGSHS:A post-hypnotic amnesia* 2. SHSS:C anosmia to ammonia 3. SHSS:C negative visual hallucination 4. SHSS:C post-hypnotic amnesia* |

Post-hypnotic items are indicated with an asterisk.

that we may want to measure, it may soon be time to start a new cycle of hypnosis scale development.

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CHAPTER 11

Parsing everyday suggestibility: what does it tell us about hypnosis?

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11.1. Introduction

Historically, the construct of suggestion or suggestibility has figured prominently in social psychology (e.g. McDougall, 1908; Hull and Forster, 1932; Orne, 1962; Milgram, 1963), clinical psychology (e.g. Freud, 1910; Janet, 1919/1925), forensic psychology (e.g. Burt, 1931), personality psychology (e.g. James, 1902; Maslow, 1939), cognition/sensation psychology (e.g. Wundt, 1892; Hull, 1933), physiological psychology (e.g. Pavlov, 1941), as well as behavioral and medical psychologies (e.g. Barber, 1959). Indeed, some of the earliest applications of factor-analytic methodologies addressed the domain of response to suggestion (Eysenck and Furneaux, 1945; Grimes, 1948). Contemporary interest in suggestibility has dramatically accelerated over the past 20 years, though in a somewhat piecemeal manner. On the one hand, current theorists productively invoke the concept of suggestion to explain aspects of perception, experience of pain, hypnosis, eyewitness testimony, psychotherapy outcome, placebo response and memory distortion in adults and children (Loftus, 1979; Wells and Turtle, 1987; Kirsch and Council, 1992; Ceci and Bruck, 1993; Wachtel, 1993; Kihlstrom, 1998; Moreno *et al.*, 1999;

Kirsch, 2000; Gheorghiu *et al.*, 2001; Holliday *et al.*, 2002; Shobe and Kihlstrom, 2002). On the other hand, no one has returned to the question of what, in general, suggestibility actually is: how to measure it; whether it is a unified or multifaceted construct; and whether response to suggestion is an attribute of personality. In other words, consciously or unconsciously, we all rely on suggestion. However, rarely do we identify these phenomena as suggestions. But this begs the question—what is suggestibility?

What about suggestibility and hypnotizability? Are they distinct or are they related? Are they, in fact, the same thing? The suggestion–hypnosis (or suggestibility–hypnotizability) relationship is a controversial and perhaps misunderstood one. In common usage, the terms suggestibility and hypnotizability are often used interchangeably, as though no difference exists between them. As Kihlstrom (Chapter 2, this volume) states, suggestion, hypnosis and hypnotizability are inextricably linked. He writes: ‘Suggestion is central to hypnosis. ... The connection between hypnosis and suggestion is so strong that the two domains have been concatenated throughout the modern history of the field’ (p. 26). But just how linked are these two concepts?

Some of the earliest research in the field found strong positive correlations between ideomotor, behavioral suggestions and hypnotic responsiveness (White, 1930; Hull, 1933; Eysenck and Furneaux, 1945). However, other evidence supports the conclusion that the relationship between nonhypnotic suggestibility and hypnotic responsiveness is tenuous at best; it is more likely that they are independent entities (Hilgard, 1973, 1991; Bowers, 1983; De Pascalis, 1989; Edmonston, 1989; Evans, 1989; De Pascalis *et al.*, 1998). At this moment, there is little agreement on the independence of nonhypnotic everyday suggestions and hypnotic responsiveness. Some claim that little differentiates suggestibility and hypnotizability (Barber, 1969; Wagstaff, 1991; Kirsch, 1997; Braffman and Kirsch, 1999). Kirsch and Braffman (2001) go so far as to state that ‘hypnotic suggestibility is simply nonhypnotic suggestibility augmented by a readiness to respond and modified by the changes in expectancy and motivation produced by the hypnotic context’ (p. 60). But what is nonhypnotic suggestibility? Implicit in the position championed by Kirsch and Braffman is that all types of suggestibility are the same. But are they? To address these questions, we will review the existing literature on suggestibility as well as describe the findings of three very recent and detailed investigations of the relationship among various suggestibility measures and between these measures and hypnotizability.

Examining the suggestibility–hypnotizability connection is one aspect of this chapter, but our overarching focus is on the study of suggestibility as a whole. Thus, we begin our chapter with an overview of the domain of suggestion and suggestibility. In this section, we outline historical conceptualizations and research addressing earlier views of suggestion and suggestibility. In particular, we emphasize early factor-analytic investigations. This will highlight the different types of suggestion measures and people’s responses to them. Next, we focus in detail on three empirical examinations of suggestibility. The first is a factor-analytic study that investigated the domain of suggestibility using both classic and contemporary measures, including hypnotizability. The second is a factor-analytic study using sensory suggestibility measures that looked at the relationship among

different measures of sensory suggestibility, as well as the relationship between sensory suggestions and hypnotic responsiveness. The third study systematically examined the relationship among different suggestibility measures (including hypnotizability) and personality correlates (which dovetails with Woody and Barnier, Chapter 10, this volume).

The purpose of the sharp focus on these three recent suggestibility studies is to shed light on the multifaceted aspects of suggestive responsiveness, both inside and outside of hypnosis. Our interpretation of the data, especially in terms of the relationship between suggestibility and hypnotizability, draws on and is consistent with arguments made by Kihlstrom (Chapter 2, this volume) and Laurence *et al.* (Chapter 9, this volume) in their chapters. Specifically, we highlight the ways in which nonhypnotic everyday suggestibility and hypnotizability are unique phenomena, and how the term suggestibility is, in many ways, misleading. Rather, the multitude of ways in which people respond to suggestion implies many types, rather than just one type, of suggestion or suggestibility. In other words, there may be as many types of suggestions as there are types of communication.

11.1.1. Suggestion and suggestibility in everyday life

Suggestion is pervasive in our daily lives (see Gwynn and Spanos, 1996; Gass and Seiter, 1999). A young boy falls from his bike, scraping his knee. He picks himself up without hesitation or discernible pain. All is well until he sees the panicked look on his mother’s face. Suddenly he ‘feels’ the pain he sees in her eyes and tears flow. A car salesman pitches the latest floor model to an ambivalent buyer. Following several smiles and affirming nods from the salesman, the buyer’s ambivalence is overcome and the sale is secured. An experimenter ‘explains’ to a research subject that he was lost in a shopping mall at the age of four. This never occurred. However, the subject now ‘remembers’ the imagined incident (Loftus and Pickrell, 1995). A college freshman at her first dorm party drinks two pitchers of what she thinks is real beer. It is in fact non-alcoholic. She staggers precipitously back to her room mumbling incoherently.

As Nisbett and Ross (1980) noted, we humans are limited in our ability to identify what influences our ongoing experience (e.g. sensation, perception, memory, expectation, judgments, aesthetic preference). This is probably an adaptive feature of being human, one which preserves cognitive and attentional resources at our disposal. We cannot afford to be aware of everything influencing us, because if we were, we would get nothing done—we would be overwhelmed by external and internal stimuli. Instead we allow influence to exert an impact without much fanfare. Presumably our species is well served by this economy. There is, of course, a price to pay. We are occasionally blind-sided by these unattended influences. When made aware of this we can be amused, chagrined or simply shocked. The real-world consequences range from the trivial to the grave: from buying the wrong fabric softener to convicting an innocent defendant. Arguably, the more we know about suggestion, the more we know about the cognitive creases of human nature. Knowing more about suggestion might even tell us how better to craft our psychotherapies, public health initiatives and parenting.

If psychological science is going to address the general notion of suggestion, it must first come to grips with two fundamental questions; one largely definitional, the other conceptual. The first question is: what is the domain of suggestion? The second question is: are there individual differences in response to suggestion? This second question is perhaps the more complicated because we can identify at least three possibilities. There might be: (1) individual differences in response to suggestibility across its broad domain; (2) as many suggestibilities as there are types of suggestions; or (3) discernible clusters of responsiveness within the domain of suggestibility (as there are related clusters of ability within the domains of intelligence and hypnosis, as argued by Woody and Barnier, Chapter 10, this volume).

11.2. Core concepts, foundation research and questions

Over the years, suggestion or suggestibility has been theoretically defined in many ways.

This abundance of definitions has led to multiple hypotheses about what the construct is and what it is not. Theorists have approached the construct from different points of view, making the literature on suggestion and suggestibility difficult to interpret. Thus, in the following section, we selectively review the history and existing empirical knowledge on suggestion and suggestibility, particularly that most relevant to understanding contemporary problems in defining and applying the construct.

11.2.1. History of the concepts of suggestion and suggestibility

The interest in suggestion and suggestibility has had a pattern of boom and bust over the years. In the late 1700s, Franz Anton Mesmer of France began using the technique of ‘animal magnetism’, or ‘mesmerism’, which, according to Mesmer, was a method by which a person suffering with presumably serious physical and psychological disorders could be ‘treated’. Mesmer posited that fluid-like substances pervaded the universe, and disruptions in those fluids caused human illness. His was a field theory of illness. Even the most serious of disorders, according to Mesmer, could be ‘cured’ via the redistribution of the fluids in the afflicted individual. However, a French Royal Commission (chaired by Benjamin Franklin) conducted a series of well-controlled, brilliantly designed scientific experiments (Franklin *et al.*, 1784/1995). The Commission concluded that a patient’s response to Mesmer’s procedures had nothing to do with magnetism and everything to do with social influence, touching and imagination (Spanos and Gottlieb, 1979; Gwynn and Spanos, 1996; Laurence, 2002; McConkey and Perry, 2002; Perry and McConkey, 2002; see also Laurence *et al.*, Chapter 9, this volume).

In the next century, Bernheim (1886) reacted to Charcot’s (1882) theory that hysteria and hypnosis were the result of neurological impairments, claiming that neither hysteria nor hypnosis was the result of neuropathy but rather the product of suggestion. Bernheim (1889) posited three necessary components for suggestion: (1) the introduction of an idea into the brain; (2) the acceptance of the idea; and (3) the realization of the idea. Bernheim’s propositions

played a role in the scientific and theoretical interest in suggestion, and these principles served at times collectively, as well as individually, as a general backdrop to the study of suggestion and suggestibility during the next century. He set the tone for viewing suggestion and suggestibility as nonorganic phenomena and steered the focus of research to defining the terms and understanding the mechanisms of suggestion and suggestibility. Consequently, many proposals and arguments about mechanisms emerged. For some, submission to a person of power and authority underpinned suggestion (McDougall, 1908); others proposed that ‘mental influence’ caused the person to think, behave and feel without much reasoning (Towne, 1916) or, in some cases, without conscious awareness (Whipple, 1924). However, little agreement was reached among researchers during the early part of the twentieth century.

Around the same time, theorists began to consider suggestion and suggestibility as a component of personality, which complicated the existing debate about the mechanisms underlying suggestion. Many early researchers proposed that suggestibility is a unitary trait, so that if a person ‘has’ the trait, it pervades most areas of his or her personality (Binet, 1900). But research findings were ambiguous. Whereas some studies reported positive correlations between certain suggestibility measures and a variety of personality traits (e.g. Lindberg, 1940; for more recent work, see Rickels *et al.*, 1964; Gudjonsson, 1983; Haraldsson, 1985), others failed to find a relationship or, at best, reported weak correlations between suggestibility measures and personality factors (e.g. Barber and Smith-Calvery, 1965; for more recent work, see Nordenstrom *et al.*, 2002; Green, 2004). Thus, the relationship between suggestibility and personality remained unclear. Relatedly, although some early studies found empirical support for a general, unitary trait, or ‘g’ factor of suggestibility (Averling and Hargreaves, 1921; Otis, 1923), others found no such evidence (Scott, 1910; Brown, 1916; Estabrooks, 1929).

Although the literature was unclear, viewing suggestibility as a trait-like component prompted theorists to hypothesize about the structure of the construct. For Clark Hull (1933), there

were two kinds of suggestibility with their two distinct components: ‘prestige suggestions’ and ‘nonprestige suggestions’. Prestige suggestions consisted of experimenter-administered explicit and direct suggestive communication for changes in behavior and experience. Nonprestige suggestions consisted of ‘depersonalized’ suggestions, meaning that no direct suggestive statement was conveyed to the participant. According to Hull, the body sway test is an example of a prestige suggestion. In this test, the participant, who is standing straight with his or her eyes closed, is given direct suggestions that s/he is swaying and falling forward (Hull, 1929). The Chevreul pendulum test would be yet another example. In this test, the participant holds a pendulum steadily while s/he is given direct suggestions that the pendulum will swing. According to Hull, the progressive weights test (developed by Binet, 1900) is an example of a nonprestige suggestion. This test consists of a series of 15 identical looking boxes. However, the first five boxes are progressively heavier while boxes 6–15 are the same in weight. The participant is asked to lift each box one at a time, beginning with the lightest box, and report any discernible difference in weight. An individual is considered to have responded positively to the suggestion if he/she reports differences in weight on the last 10 boxes. Notably, it is never explicitly suggested to the participant that the boxes will feel heavier.

Summing up, although many theories emerged during the twentieth century of the construct of suggestion and suggestibility, there was little agreement on what exactly constituted the domain of suggestibility. And whereas Hull’s (1933) important research carefully demarcated two distinct types of suggestibility (direct, ideomotor suggestions and indirect suggestions), and early theorists and researchers in the area developed and used different suggestibility measures (e.g. Binet, 1900; Whipple, 1924), most did not propose different or distinct suggestibility constructs. It was left to factor-analytic work to determine whether different measures of suggestion and suggestibility require or imply distinct (i.e. more than one) suggestion or suggestibility constructs.

11.2.2. Factor analytic investigations of suggestibility

The first comprehensive factor-analytic investigation of the domain of suggestibility was by Eysenck and Furneaux (1945). Their aim was to test the boundaries of the construct and to determine whether suggestibility is best understood as a unitary trait or as multiple traits of suggestion, as proposed by Hull (1933). Eysenck and Furneaux's experimental sample consisted of 60 male army veterans, all of whom were patients at a hospital for 'nervous disorders'. The patients were further screened to assure that their IQ level was roughly between 90 and 110. This study used 12 suggestibility measures: picture report test, inkblot suggestion test, Chevreul pendulum test, odor test, progressive weights test (personal and impersonal), heat illusion test, body sway test, press test, release test, hypnosis (hypnotizability) and post-hypnotic suggestion. Although Eysenck and Furneaux (1945) measured hypnotizability, their measure pre-dated (but was a forerunner of) the standardized scales in use today (for more on hypnotizability scales, see Woody and Barnier, Chapter 10, this volume).

Eysenck and Furneaux (1945) derived two factors. The first factor accounted for 55 percent of the variance in response, while the second factor accounted for 20 percent. Eysenck and Furneaux (1945) labeled the first factor 'primary suggestibility', which they stated was an ideomotor type of suggestion involving direct communication. Measures that loaded on this first factor were: body sway test, press and release test, Chevreul pendulum test and hypnotizability (intercorrelation coefficient +0.50 for this factor). Body sway and hypnotizability had the highest loadings. Eysenck and Furneaux labeled the second factor 'secondary suggestibility', which they stated involved indirect sensory or perceptual suggestions without directive communication by the experimenter; they linked this type of suggestibility to 'gullibility' (Eysenck and Furneaux, 1945). Measures that loaded on this second factor were: inkblot suggestion test, odor test and progressive weights (intercorrelation coefficient +0.15 for this factor). The (low) correlation between these two factors, which paralleled Hull's (1933) 'prestige' and 'nonprestige'

suggestions, suggested that these two factors were distinct. This study is significant because it was the first to derive, via factor analysis, a two-factor model of suggestibility.

The next two studies (Grimes, 1948; Benton and Bandura, 1953), however, failed to support Eysenck and Furneaux's (1945) two-factor model of suggestibility. In fact, they found no clearly delineated factor structure at all. Grimes (1948) tested a sample of 233 orphan boys (ages 8–15) on 16 measures of suggestibility and factor-analyzed the results. Grimes (1948) used three of the same measures as Eysenck and Furneaux (1945): progressive weights test (personal and impersonal) and odor test; the remaining measures did not overlap. Grimes (1948) reported weak correlations between the measures of suggestibility. But there was little justification for extracting a first factor and no indication of any other factor structure. Benton and Bandura (1953) tested a sample of 50 undergraduate students (25 males, 25 females) on nine measures of suggestibility and factor-analyzed the results. Benton and Bandura used seven of the same measures as Eysenck and Furneaux: picture report test, inkblot suggestion test, progressive weights test (personal and impersonal), body sway test, press test, and release test; and two of the same measures as Grimes (1948): two versions of progressive weights test. Notably, neither Grimes (1948) nor Benton and Bandura (1948) measured hypnotizability. Benton and Bandura's (1948) results were similar to those of Grimes (1948): no viable factor structure, which again was contrary to Eysenck and Furneaux's findings. There are at least two possible reasons for the differences across these three early studies: the selection of measures (some overlapping, some nonoverlapping), and the selection of participants (disabled army veterans versus orphaned boys versus undergraduate college students). Rather than becoming clearer, the 'suggestibility waters' seemed muddier than ever!

In an attempt to address some of the (measurement and sampling) problems of Grimes's (1948) and Benton and Bandura's (1953) work, Stukát (1958) conducted three independent factor-analytic studies using samples of children, adolescents and adults. In his child study, Stukát tested a sample of 67 children (37 boys and 30 girls with

a mean age of 8.6 years) on 15 measures of suggestibility and factor-analyzed the results. Stukát used four of the same measures as Eysenck and Furneaux (1945): inkblot suggestion test, Chevreul pendulum test, progressive weights test and body sway test; the remaining 11 measures did not overlap: arm lowering, hand rigidity, weight pairs test, line pairs test, auditive suggestibility, leading questions, contradictory suggestions test, majority suggestions test, an IQ test and five different teacher-rating measures. There were 21 variables in total. Hypnotizability was not measured in this or any of Stukát's three studies. In this study, a first factor emerged on which body sway and arm lowering suggestions firmly loaded. There was a faint indication of a second factor, which consisted of teacher-rating scales of independence and perceived social status among peers. Because these latter measures were unrelated to suggestibility, the second factor appeared not to be a suggestibility factor. There was also very weak evidence of a third factor of suggestibility, which consisted of sensory-perceptual suggestibility measures. The results of Stukát's (1958) first study are hard to interpret, however, because of at least two major shortcomings: an overinclusion of nonsuggestibility measures and a poor subject to variable ratio.

In his second study, Stukát tested a sample of 184 adolescent girls (mean age 11 years) on even more tests of suggestibility, but across a broader range, and factor-analyzed the results. Stukát (1958) used some of the same suggestibility measures used in his first study with children: body sway test—heterosuggestion, arm lowering test, pendulum test, progressive weights test, line pairs test, weight pairs test, ink blots test, leading questions test and contradictory suggestions test; as well as an additional set of measures: progressive lines test, tactile test, hallucination test, combined auditory–tactile–olfactory–visual test, co-judgment suggestion test—tactile discrimination/indistinct words/aesthetic tests, an additional leading questions test, an additional line pairs test, an additional weight pairs test, an additional contradictory suggestions test, a size–weight illusion test, Sander's illusion test, a teacher rating of suggestibility and an intelligence measure. There were 24 variables in total. As in Stukát's first study, a first factor emerged (as in Eysenck and

Furneaux's study) on which body sway and arm lowering suggestions again loaded strongly. However, weak statistical relationships among the other measures ruled out any additional suggestibility factors.

In his third study, Stukát (1958) tested a sample of 90 adults on 17 measures of suggestibility and factor-analyzed the results; these 17 measures were a combination of those used in his first two studies. The results with this adult sample were similar to the two previous studies: a first factor emerged on which body sway and arm levitation suggestions loaded strongly (arm lowering was the test used in the previous two studies). There were also hints of another factor. For this weakly loaded second factor, the following measures loaded the highest: the contradictory suggestions test (in which the participant is asked to discriminate between the size of a circle shown and the size of a circle in a standard card, after the experimenter has suggested a difference in size), color measures (having participants state the specific color of a hue and then receiving false feedback regarding their answer), the co-judgment suggestion test and indistinct words test (test of susceptibility to a co-judge's expressed opinion in judging vague stimuli). No other clearly delineated factor emerged. Although it is difficult to interpret Stukát's studies because they differ so markedly from one another in terms of the type and numbers of subjects, as well as the suggestibility measures used, they produced clear evidence at least for a first factor. Consistent with Eysenck and Furneaux's (1945) findings, but inconsistent with Grimes's (1948) and Benton and Bandura's (1953) findings of no factor structure, Stukát's results imply the existence of at least one suggestibility factor, best described as involving direct, ideomotor suggestions.

In the 1960s, the search for the factor structure of suggestibility continued with an unpublished doctoral dissertation by Duke (1961). He tested a sample of 91 army veterans (mean age was 58.5 years with an age range from 34 to 72) who were living in a residential facility for persons who were 'not sick enough to be hospitalized, yet not well enough to live outside an institutional setting' (p. 31) on 10 measures of suggestibility and factor-analyzed the results. Duke used four of the same measures as Eysenck and

Furneau (1945): Chevreul pendulum test, odor test, progressive weights test and body sway test; and six additional measures: progressive lines test, color test, picture memory test, dynamometer test, arm levitation test and placebo test. Duke found strong evidence for a first factor of the direct ideomotor type, consistent with Eysenck and Furneau (1945) and Stukát (1958). Measures that loaded on this first factor were: Chevreul pendulum, body sway, dynamometer test and arm levitation (intercorrelation coefficient +0.36 for this factor). Duke also found weak support for a second factor. Measures that loaded on this factor were: fidelity of report/picture memory test (a rudimentary measure of response to leading questions), progressive lines test, progressive weights test, odor test and placebo responsiveness test. The intercorrelation coefficient for this second factor was only +0.15, although it increased to +0.21 when the progressive weights and lines tests were removed from the statistical analysis. Notably, hypnotizability was not included as a measure of suggestibility in Duke's (1961) study.

During the same decade, Hammer *et al.* (1963) also conducted a factor-analytic investigation of the domain of suggestibility, again looking for unitary versus multitrait confirmation. They tested a sample of 73 undergraduate college students (24 male, 49 female) on 13 measures of suggestibility and factor-analyzed the results. Their measures included: arm bending, arm straightening, catalepsy, thumb press, thumb release, heat illusion I, heat illusion II, heat imagery, Chevreul pendulum, visual imagery, progressive lines, progressive designs and cross-fluctuations. Hammer *et al.* found evidence for two distinct factors. They identified the first suggestibility factor as 'ideomotor' (consistent with Eysenck and Furneau's first factor); the arm bending test, thumb press test and Chevreul's pendulum test loaded highest on this factor. They identified the second suggestibility factor as 'vividness of imagery'; the heat illusion test and the heat imagery test loaded highest on this factor. Hammer *et al.* defined this factor as involving an acceptance of the suggested state or condition.

Looking across these early factor-analytic studies, interpretation is made difficult by methodological weaknesses. First, the studies

sampled different populations. Whereas some studies included only army veterans who were identified as either being in a hospital or in a residential institution for physical or psychological ailments (Eysenck and Furneau, 1945; Duke, 1961), others examined children (Grimes, 1948; Stukát, 1958), boys (Grimes, 1948) or girls (Stukát's, 1958, Study 2) only. This alone renders comparison of findings difficult. Second, there was little overlap in the suggestibility measures used across these studies. Third, in several studies statistical power was compromised by small sample sizes relative to large numbers of variables (e.g. Stukát, 1958). Another problem is the conspicuous absence of hypnotizability as a measure of suggestibility. The only attempt to examine the factor loading of hypnotizability occurred in Eysenck and Furneau's (1945) original study.

Taken together, the findings reviewed here fail to present a clear picture of suggestibility. What can be salvaged? Four of the six studies yielded a first factor with some degree of coherence (Eysenck and Furneau, 1945; Stukát, 1958; Duke, 1961; Hammer *et al.*, 1963). In general, this first factor appeared to reflect response to a direct communication from the experimenter regarding a target response (e.g. hand lowering, postural sway). However, this first factor did not emerge in Grimes's (1948) or Benton and Bandura's (1953) studies, and Stukát (1958) found only very weak support for this factor. Given the methodological problems and general disarray in the findings, our observations from this literature must be tentative. First, suggestibility might not be a broad-spectrum ability. Instead, a person's response to suggestion may depend, to a large extent, on the type of suggestion rather than on a singular ability or personality tendency. Second, individuals might have a proclivity to respond to direct, explicit communication of the target response, which is distinct from their response to nondirect suggestive communications. Finally, although response to nondirect suggestive situations (e.g. progressive weights, placebo response) appears to tap abilities that are somewhat distinct from those associated with direct suggestion, there is little evidence to date that response to nondirect suggestion constitutes a cohesive factor.

11.2.3. Suggestibility and sensory experiences

Measures of suggestibility that elicit sensory experiences have been included in many of the classic suggestibility studies (Wundt, 1892; Hull, 1933; Eysenck and Furneaux, 1945; Stukát, 1958; Hammer *et al.*, 1963; Gheorghiu *et al.*, 1975; Hajek and Spacek, 1987). For instance, studies have included odor tests (in which participants are led to believe that they are smelling an odor that is not there), heat illusion tests (in which participants are given suggestions of heat when heat does not actually exist) and tactile tests (in which participants are led to believe that a change in weight or a stimulus to the skin exists when, in fact, it does not). Suggestions for such sensory experiences clearly play a central role in hypnosis and, specifically, hypnotizability measures. For instance, the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer and Hilgard, 1963) includes suggestions for hearing and feeling a mosquito (auditory and tactile), for tasting something sweet and then sour in the mouth (taste), for hearing someone talking through a loudspeaker (auditory) and for seeing two (not three) small boxes (visual). Similarly, researchers have investigated hypnotic subject's reactions to sensory suggestions and (often competing) sensory information (e.g. suggestions to not see in the face of visual information, suggestions to feel a ball heat up when the ball actually does or does not heat up, suggestions to feel or not feel touches on the hand when pressed with anesthesiometers of different pressures; for reviews, see McConkey, Chapter 3; Cox and Bryant, Chapter 12, this volume). The ability to respond to sensory suggestions—otherwise known as cognitive-perceptual distortions—is considered one of four important building blocks of hypnotizability (see Woody and Barnier, Chapter 10, this volume).

However, it remains unclear where sensory suggestibility fits within the construct of suggestibility. Whereas some of the early factor analyses that used sensory measures indicated that they loaded on an indirect suggestibility factor (Eysenck and Furneaux, 1945; Duke, 1961; Hammer *et al.*, 1963), others found no clear pattern (e.g. Stukát, 1958). More recently, Polczvk and Pasek (2006) found a significant

relationship between sensory suggestibility and direct methods of suggestion.

Gheorghiu and colleagues have focused in detail on the nature of sensory suggestibility, and their work raises some important questions (Gheorghiu and Reyher, 1982; Gheorghiu *et al.*, 2001, 2003; see also Cautela and McLaughlin, 1965). Gheorghiu and Reyher (1982) developed an 'indirect-direct' sensory suggestibility scale using 12 sensory measures: three tactile (glass test, ring test and hand pricking test), four auditory (tone test, three-tone test, simultaneous watch test and watch test) and five visual (light test, black disk test, half-field light test, field vision test and dynamo test). Gheorghiu and Reyher categorized these 12 measures as belonging to one of five categories: (1) increasing intensity of the stimulus, where a stimulus is presented, the subject is told it will increase in intensity, but it actually does not (e.g. in the light test the subject is asked to look at a light bulb that supposedly gets brighter when the experimenter turns a knob—the measure of suggestibility is whether the subject reports seeing the light bulb getting brighter); (2) decreasing intensity of the stimulus, where a stimulus is presented, the subject is told it will decrease in intensity, but it actually does not (e.g. in the tone test the subject is presented with a tone of constant intensity that supposedly gets less intense—the measure of suggestibility is whether the subject reports the tone getting lower); (3) simultaneous presentation with one pair omitted, where the subject is told they will be presented with a stimulus on both sides of their body, but in fact only one side of the body receives the stimulus (e.g. in the hand pricking test the subject is told that pricking will occur on both hands, yet only one hand is actually pricked—the measure of suggestibility is whether the subject reports pricking on both hands); (4) expectation of series without objective stimuli, where the subject is told to notice a particular stimulus that doesn't actually exist (e.g. in the watch test the subject is presented with a stop watch that supposedly 'ticks'—the measure of suggestibility is whether the subject reports hearing the ticking of the watch); and (5) illusory cause and effect, where the subject is told to notice a particular effect or result supposedly caused through a particular manipulation,

but the manipulation never takes place (i.e. in the dynamo test the subject is presented with a bulb that supposedly gets brighter by the manipulation of a dynamo, which generates a tone that gets progressively louder—the measure of suggestibility is whether the subject reports that the bulb gets brighter as the tone gets louder).

Based on testing with 60 individuals, Gheorghiu and Reyher's (1982) sensory suggestibility scale showed strong psychometric properties, including a reliability coefficient of 0.75 and a test–retest correlation of 0.71. Although the item analysis yielded significant correlation coefficients among all but two measures (the glass test and the ring test), there were differences in the difficulty of different measures (much like the difficulty of hypnotic items; see Woody and Barnier, Chapter 10, this volume). Tests involving increasing intensity of the stimulus (e.g. the light test) were the easiest, whereas tests involving decreasing intensity of the stimulus (e.g. the tone test) were the most difficult. In other words, believing that a sensory stimulus was present and increasing was easier than believing that a sensory stimulus was present and decreasing (cf. positive versus negative hallucinations in hypnosis).

Although Gheorghiu and Reyher's (1982) scale is considered a reliable and useful measure of sensory suggestions, there are limitations in their work. First, olfactory measures (e.g. the odor test), which have been included in classic studies of suggestibility, were omitted. Second, while the authors reported reliable scales, the 12 measures were in fact extracted from an original set of 21 items and were never cross-validated. Third, factor-analytic methods with exclusive sensory measures were not employed to determine if such measures do indeed form a coherent factor structure. Fourth, the scale items were entirely dichotomous (e.g. did or did not report that the light bulb got brighter in the light test) and hence vulnerable to producing artifactual factor-analytic solutions (Hoijtink *et al.*, 1999; for discussion of similar issues in hypnotizability measures, see Woody *et al.*, 2005; see also Woody and Barnier, Chapter 10, this volume).

Although sensory suggestibility appears to be an important part of the overall domain of suggestibility (as well as an important part of the domain of hypnosis and hypnotizability),

many of the lingering questions about suggestibility in general apply to sensory suggestions. It is still unclear how the construct of suggestibility is structured and where sensory suggestibility lies within it. Distinguishing sensory suggestions from other types simply on the basis of an 'indirect–direct' dimension does not tell us enough about structure, since the existence of an indirect factor of suggestibility, or indeed any other factors, is yet to be consistently confirmed with factor analysis. And given that specific types of sensory suggestions may be related to its own, unique abilities rather than form a coherent unitary subtype of suggestibility, we need more research that focuses on sensory measures. Finally, since sensory suggestibility clearly plays an important role in hypnotic responding, we need research to examine directly the relationship between sensory suggestibility and hypnotizability.

11.2.4. Suggestibility and personality

Let us now consider the relationship between nonhypnotic suggestibility and personality (for a review of the hypnotizability–personality correlates link, see Laurence *et al.*, Chapter 9, this volume). To the extent that suggestibility may be a trait-like component of human behavior (e.g. Binet, 1900; Averling and Hargreaves, 1921; Otis, 1923), empirical examination of the link between suggestibility and personality is meaningful and important. Of the little research that exists on this question, the findings are ambiguous and difficult to interpret. For example, whereas some researchers have found a relationship between 'hysteria' and measures of suggestibility (e.g. Lindberg, 1940), others have not (e.g. Eysenck, 1943). Whereas some researchers have found a relationship between 'neuroticism' and measures of suggestibility (e.g. Eysenck, 1943; Himmelweit *et al.*, 1946; Arcieri, 1949; Stukát, 1958; Furneaux, 1961; Furneaux and Gibson, 1961), others have not (e.g. Haraldson, 1985). These ambiguous findings are in large part due to variations in research design and focus. In fact, the available studies differ greatly. For instance, whereas some studies have focused on several personality traits (e.g. Baumgartner, 1931; Lindberg, 1940; Arcieru, 1949; Stukát, 1958; Furneaux and Gibson, 1961; Van Hook

and Steele, 2002), others have focused on specific traits (e.g. Eysenck, 1943, 1947; Himmelweit *et al.*, 1946; Furneaux, 1952; Das and O'Connor, 1959). Also, these studies of the relationship between suggestibility and personality traits have used different numbers and a broad range of often nonoverlapping suggestibility measures.

Lindberg (1940) conducted one of the earliest studies exploring the relationship between suggestibility and personality traits. He tested 159 inpatients diagnosed with (what he called) 'slight psychoses' and 'nervous disturbances' on two versions of the odor suggestibility test (i.e. subjects were asked to smell and identify substances in six bottles, which were labeled as 'roses', 'cinnamon', 'vanilla'. In one version of the test, the bottles actually contained these substances, in a second version they did not.) The personality or character traits of interest were classified as 'validity' (i.e. a loss of muscle strength or weakness), 'stability' (i.e. emotionally responsive to surroundings), 'solidity' (i.e. emotional stability) and 'capacity' (i.e. intellectual functioning), more commonly defined at that time as asthenic, syntonik, hysterik and oligophrenik, respectively. In the language of his time, Lindberg reported that the greatest number of 'suggestibles' was among the oligophrenics, followed by the hysterics, then the asthenics, and finally the syntonik personality types. His findings offered some support to the beliefs of Charcot (1882) and the Salpêtrière school, who claimed that hysterical personalities were more responsive to suggestion (and to hypnosis!).

A few years later, Eysenck (1943) tested the assumption that hysterics are hypersuggestible. He tested 15 male and 15 female patients with 'hysterical personality', and 15 male and 15 female 'neurotics with hysterical symptoms' (not diagnosed as having a hysterical personality type) on eight suggestibility measures (four direct suggestion measures, four indirect suggestion measures). Eysenck (1943) reported that hysterics were no more suggestible than the nonhysterics; he reiterated these findings a few years later when he wrote: 'the conclusion was drawn that hysterics are no more suggestible than non-hysterics' (Eysenck, 1947, p. 191). However, in a later study, Eysenck (1947) found a significant relationship between neurotic personality and responsiveness to the body sway test.

In similar fashion, Himmelweit *et al.* (1946) tested 198 male 'service patients' (patients of the armed forces) and found a strong relationship between neuroticism and response on the body sway test. Furneaux (1952) also found a slight relationship between neuroticism and the body sway test in a sample of college students and adult (noncollege) participants. In contrast, Messer *et al.* (1938) found no relationship between neurotic personality traits and the body sway test in a sample of 129 male college students.

Baumgartner (1931) took a broader look at the relationship between suggestibility and personality traits in a study involving 56 nursing students. Here, the personality traits under investigation were optimism and pessimism, sympathetic and nonsympathetic, temperament, personal beauty, tactfulness, honesty and sincerity. Baumgartner reported that only the traits of sympathy, sweet temper and tactfulness were related to measures of suggestibility. Notably, Baumgartner did not include neuroticism in his study. Arcieri (1949) also examined the relationship between suggestibility and personality types, this time in a study involving 56 normal, neurotic and schizophrenic research participants. Arcieri reported that neurotics responded more frequently to visual measures of suggestibility (participants were given suggestions of what they would see in cards that were shown for seconds at a time, and they were asked to draw what they had seen) than normals and schizophrenics. Das and O'Connor (1958) explored the relationship between nonparanoid and paranoid personalities and suggestibility using the body sway test. Using a sample of 20 nonparanoid and 20 paranoid individuals, they found that paranoid people were more likely to sway than the nonparanoid people. So while some of these earlier studies linked suggestibility (mainly the direct, ideomotor body sway measure) to different personality subtypes or traits, others failed to do so (Messer *et al.*, 1938; Eysenck, 1943). This makes inferences of any relationship between suggestibility and personality very difficult.

Stukát (1958) broadened the scope of research in this area by conducting three studies examining various personality variables, and using a wider range of suggestibility measures. In his first study, Stukát tested 87 participants,

consisting of hysterics, asthenics, syntonics and oligophrenics (personality types previously explored by Lindberg, 1940) on 12 measures of suggestibility: body sway, Chevreul pendulum, weight pairs, line pairs, hallucinations test (combined auditory, tactile, olfactory and visual test where the participant is given suggestions of sensory stimuli that do not actually exist), combined auditory and olfactory test (same hallucinatory premise), two leading questions tests, majority suggestions test (indexing how influenced participants are by other people's opinions), contradictory suggestions, co-judge suggestions tactile discrimination test and co-judge suggestions test indistinct words (co-judge suggestion tests index the participant's tendency to be influenced by co-judgments of tactile perceptions or visual perceptions of words). Somewhat expectedly, Stukát found no relationship between measures of 'primary/direct' suggestibility tests (e.g. body sway and Chevreul pendulum) and a hysteric personality type, as suggested in previous studies. There were no other clear differences between hysterics and nonhysterics on the rest of the suggestibility measures. However, there were varying positive and negative relationships between the other personality types [oligophrenics or 'capacity' (i.e. intellectual ability), asthenics or 'validity' (i.e. a loss of muscle strength or weakness), syntonics or 'stability' (i.e. emotionally responsive to surroundings)] and the 'primary' and 'secondary' suggestibility measures, yielding overall rather inconclusive results.

In his second study, Stukát (1958) tested 303 neurotic subjects (144 males and 159 females) and 90 normal subjects (31 male and 59 female) on eight measures of suggestibility used in Study 1: body sway test, Chevreul pendulum test, weight pairs test, hallucinatory test, leading questions, contradictory suggestions test, co-judge suggestions tactile discrimination and co-judge suggestions indistinct words test. Neurotics showed higher scores than normals on four of the suggestibility measures (weight pairs test, leading questions test, contradictory suggestions test and co-judge suggestions indistinct words test), but similar scores on the remaining four measures. Participants who Stukát considered to be 'submissive' (with a combination of high anxiety and low self-confidence)

showed higher suggestibility scores, particularly on tests that added an element of interpersonal pressure to the suggestion. For instance, in the co-judge suggestions test, participants were asked to choose stamps on the basis of aesthetic value; importantly, they took turns with the experimenter to judge. Although not all suggestibility measures showed a relationship with neuroticism, Stukát interpreted his results as consistent with previous findings that neurotics are more suggestible than 'normals' especially in situations of interpersonal pressure.

In his third study, Stukát (1958) tested 46 male students on three measures of suggestibility: body sway test, weight pairs test and co-judge suggestions tactile discrimination, to test their relationship with a projective personality test. Stukát administered the Rorschach Inkblot Test to determine 'emotional stability or instability' (i.e. hysterical traits), 'anxiety and low self-confidence' (i.e. submissive traits) and 'stereotypy and rigidity'. Although the analyses were mostly exploratory, Stukát reported that participants with hysterical traits did not seem more suggestible than participants with other traits. However, as in his second study, participants who Stukát considered to be submissive showed higher suggestibility scores particularly on tests that involved interpersonal pressure.

Following Stukát, Furneaux and Gibson (1961) examined the relationship between suggestibility (as measured by the body sway test) and four personality types: neurotic extroverts, stable extroverts (normal extroverts), neurotic introverts and stable introverts (normal introverts). Although they found no relationship between neurotic extroverts and body sway, there was a positive relationship between neurotic introverts and body sway. Further, Furneaux and Gibson (1961) found that stable extroverts (or 'normal' extroverts) were more susceptible to the body sway measure. This finding partially supports Stukát's (1958) report of heightened suggestibility in neurotics, although not with neurotic introverts. Abraham (1962) explored the relationship between three different measures of suggestibility (heat, odor and persuasion tests) and two specific personality traits (autonomy and deference) in a group of 101 college students. Abraham found that whereas subjects who scored high in deference

and low in autonomy were significantly less susceptible to the suggestibility tests, those who scored high in autonomy and low in deference were more suggestible. Abraham concluded that all three tests could accurately predict suggestibility in both autonomous and deferent personalities.

Along the same lines, Rickels *et al.* (1964) examined the relationship between two measures of suggestibility (the body sway test and the Rorschach compliance measure—the subject is shown a Rorschach card and a particular percept is suggested; the subject is then asked if the percept is seen on the card) and four personality traits (anxiety, dependency, hostility and neuroticism) in a group of 21 neurotics and 25 normal subjects. In the neurotic group, Rickels *et al.* found that body sway was significantly correlated with dependency; none of the other traits correlated in this group. In contrast, in the normal group, body sway was significantly correlated with anxiety and dependency; neuroticism and hostility were not significantly correlated in this group. Whereas in the neurotic group, the Rorschach compliance test was positively correlated with anxiety and hostility, in the normal group, performance on this test was negatively correlated with these same traits.

Although the results from these early investigations of the relationship between personality and suggestibility tests are inconclusive, what about more recent studies? Haraldsson (1985) examined the relationship between interrogative suggestibility and four personality traits (psychoticism, extroversion, neuroticism and social desirability) in a sample of 79 participants (65 males and 14 females). He reported a significant positive correlation between interrogative suggestibility and social desirability (i.e. lie factor), which supports Gudjonsson's (1983) earlier similar findings. In Gudjonsson's (1983) study, he also found a positive correlation between interrogative suggestibility and neuroticism. Almost two decades later, Van Hook and Steele (2002) explored the relationship between suggestibility and personality in 101 college students (85 female and 16 male), randomly assigned to a control group ($n = 57$) or experimental group ($n = 44$). They administered the Millon Index of Personality Styles (Millon, 1994), a tolerance of ambiguity measure

(measures the way in which a person structures information about ambiguous situations in the presence of unfamiliar, complex and incongruent cues), and the Lindberg Suggestibility Assessment (i.e. a short video involving what appeared as a conflict between a mother and a child, followed by a questionnaire assessing memory with a second administration a week later), which they considered a measure of suggestibility of memory due to the test's intention of influencing the memory of the mother-child conflict scenario (i.e. a mother hitting a child) by the presence (experimental group) or absence (control group) of a qualifying suggestion (i.e. the boy was a 'bad boy' versus no suggestion is given). Although Van Hook and Steele found no clear relationship between personality traits and responsiveness to the suggestions as a whole, the findings suggested that specific personality subtypes (e.g. sensing, innovating, agreeing and low tolerance of ambiguity) in the experimental condition were more related to suggestibility than an overall personality style.

As in the other areas of suggestibility research, the studies of suggestibility and personality have produced substantial data, some answers, but also questions. Because these studies have varied so much in terms of measures, findings and conclusions, they are suggestive rather than definitive! Many questions remain unanswered about the relationship between suggestibility and personality, about sensory suggestibility and about the construct of suggestibility as a whole, which brings us to a detailed discussion of recent research.

11.3. Current research: three major studies

The findings of previous factor-analytic work, although mixed, offer a useful foundation for investigating the domain of suggestion and suggestibility in more sophisticated ways. Although instructive, this historical research leaves unanswered the two major questions that we posed in the Introduction: is suggestibility a singular or multifaceted construct, and what is the relationship between hypnotizability and nonhypnotic methods of suggestion? The continued lack of answers to these questions is a problem given the

frequency with which contemporary psychology has relied on, and continues to rely on, the construct of suggestion or suggestibility as an explanation for various phenomena. For example, contemporary researchers have invoked suggestion and suggestibility in their examinations of the nature of leading questions (or interrogative suggestibility; Gudjonsson, 1987, 1984), of false memory in children and adults (Barnier and McConkey, 1992; Ceci and Bruck, 1993; Kihlstrom, 1998) and of sensory experiences (Gheorghiu *et al.*, 2003). Given the more powerful statistical tools now available to plume the structure of a construct, it is time for us to take a second, and more careful, look at what suggestibility is and is not. In this section we describe three recent studies in which we and our colleagues focused on: (1) a new factor analysis of suggestibility; (2) sensory suggestibility; and (3) the relationship between suggestibility and personality.

11.3.1. Study 1: a fresh factor analysis of suggestibility

In the first of three studies on suggestibility, we (Tasso *et al.*, 2003) took a fresh look at the domain of suggestibility with factor-analytic methods. With the last factor analysis completed over 40 years ago (Hammer *et al.*, 1963), we believed that a timely study was in order to understand better the domain of suggestibility. We aimed to investigate the construct as well as to identify the factor structure of suggestibility.

In determining if suggestibility can best be explained by a multi- or single-factored model, we sought to identify if different suggestibility measures are completely distinct (i.e. no coherent factor structure), related (i.e. clearly delineated factor structures) or fundamentally the same (i.e. one-factor model). We thought that if a multifactor structure emerges—that certain measures can be lumped together—then researchers and theorists alike could assume that certain types of suggestion are related to other types of suggestion (i.e. ones that load on the same factor). If a one-factor model is the best way in which to explain the domain of suggestibility, then it would essentially negate the need for a nomenclature to describe the various ‘types’ of suggestion. For example, if hypnotic

responsiveness loaded similarly to persuasion and interrogative suggestibility, then we can say each method of suggestion has the same impact and, therefore, simply use the term ‘suggestion’ for each of the measures. No clear factor structure would indicate complete independence of each singular suggestibility measure. This would imply situation-specific responsiveness to each method of suggestion, rather than a broad-based suggestibility.

11.3.1.1. Testing suggestibility in study 1

In planning this study, we believed that success rested on selecting the appropriate measures of suggestibility. We wanted measures that reflected historical understandings of suggestibility, that were currently relevant to the construct and that offered adequate spread across possible suggestibility factors. Thus, we followed three guiding principles when selecting suggestibility measures. First, in this study, we maximized the number of suggestibility measures that were used in previous factor-analytic studies. Second, we aimed to include suggestibility measures with contemporary importance. Third, we looked for measures that would provide some spread across the three putative domains of suggestibility as generally depicted in some (though not all) of the literature. Specifically, we looked for suggestibility measures that would potentially tap into direct, ideomotor methods of suggestion, in addition to indirect types of suggestion. We also attempted to identify measures that would fall under Eysenck’s (1947) tertiary or social influence suggestibility factor. This factor was virtually nonexistent in the previous factor analyses, except for a hint in Stukát’s (1958) child study. However, now, with the availability of standardized measures of this method of suggestion, we believed that it would be negligent to not include this factor in our study.

We tested 110 undergraduate college students on nine measures of suggestibility, including hypnotizability. Our study consisted of two phases: an in-class group measure of hypnotizability and individual laboratory testing of other measures. The first measure was hypnotizability. We used the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor and Orne, 1962; see also Woody and Barnier, Chapter 10, this volume) to provide

hypnotizability scores as part of an undergraduate introductory psychology course.

In a separate, individual laboratory session, we administered the remaining eight suggestibility measures. The second measure (and the first laboratory test) was progressive weights (Binet, 1900). The test proceeded via the standard instructions, which presented participants with 15 identical looking boxes and asked them to state if they could detect any differences in weight between the boxes. While the earlier boxes differ in weight, the latter do not. Any reported difference in weight between boxes that do not differ is considered a response to this subtle suggestion. Progressive weights has been used in all but Hammer *et al.*'s (1963) factor analysis. This measure loaded on the indirect factor for Eysenck and Furneaux (1945) and in Stukát's (1958) second study, though it failed to load coherently in any other study. We chose this measure as it has been used previously, in addition to possibly tapping into the indirect factor.

The third measure was persuasibility. Developed by Steele (1971), this test measures the degree to which participants are persuaded to alter their original judgment of a specific circumstance after being informed of the judgment of an identified expert. Although there have been attempts to measure this form of suggestion (e.g. Stukát, 1958), no standardized measure of persuasion has been used in previous suggestibility factor analyses. We included persuasion in this study as it is highly relevant to contemporary social and legal issues, and we believed it possibly would load on the third, social influence factor.

The fourth measure was Chevreul pendulum. The apparatus consists of a bob tied to the end of a string; while the participants are told that if the pendulum is held over a ruler and they look steadily at the bob it will soon begin to swing along the length of the ruler. Participants are told that this swinging phenomenon will occur despite their stringent attempt to keep the pendulum steady. Chevreul pendulum was used in four of the previous suggestibility factor-analytic studies (Eysenck and Furneaux, 1945; Stukát, 1958; Duke, 1961; Hammer *et al.*, 1963) and loaded on the direct, ideomotor factor in all but two of Stukát's (1958) studies. We included this measure because of its regular historical use and semi-consistent factor loading.

The fifth measure was the odor test. The apparatus consists of six dark-colored bottles in which the contents inside are not visible. The first three bottles contain the odors that they are labeled with, while the final three bottles contain only water. Any reported 'smell' for any of the three water-only bottles is considered a response to this suggestion. The odor test was used by Eysenck and Furneaux (1945), Grimes (1948), Stukát (1958, Study 3) and Duke (1961). This measure loaded on the second, indirect suggestibility factor on each of the four studies except Grimes's (1948). Inclusion of the odor test was based on its previous use and potential to tap into the indirect type of suggestibility.

The sixth measure was the body sway, or postural sway, measure, which was adapted from the protocol used in the Stanford Hypnotic Susceptibility Scale, Form A (SHSS:A; Weitzenhoffer and Hilgard, 1959). Essentially, participants are told to think about swaying backward despite their attempts to remain still. A research subject who sways is identified as responding to this method of suggestion. Body sway was used in each of the previous factor analyses except by Grimes (1948) and Hammer *et al.* (1963). This measure loaded satisfactorily on the ideomotor factor in each study except in Benton and Bandura's (1953). This measure was chosen due to its frequent historical use.

The seventh measure was interrogative suggestibility. We used the latest version of the Gudjonsson Suggestibility Scale, or GSS II (Gudjonsson, 1987). Participants are told to listen carefully to a story because they will have to report everything they can remember. After the story is read by the experimenter, participants are asked to answer 20 questions directly related to the story. However, 15 of the items are 'suggestive', meaning they contain false premises (the questions cannot be answered by the content of the story). After answering the questions, the experimenter informs the participants that they made too many mistakes and need to answer the questions again, but this time with an attempt for 'greater accuracy'. No standardized measure of this method of suggestion has previously been used in any of the suggestibility factor analyses. However, this type of suggestion has tremendous importance when it comes

to police interrogation and eyewitness recall. In addition to having contemporary relevance, interrogative suggestibility has the potential to load on the third, social influence, factor.

The eighth measure was a newly designed measure of placebo responsiveness. Created by the authors of this study (for a full description, see Tasso, 2004), this test was developed as a nonintrusive placebo measure in which participants do not need to ingest any type of substance. Instead, they are told that the ‘white noise’ on a compact disc (CD) has been digitally enhanced to energize a person’s physiology. In other words, participants are told that this CD increases their physiological reactivity. However, the CD is made of generic white noise which has no physiological impact on participants. Placebo responsiveness was used in Grimes’s (1948) and Duke’s (1961) suggestibility factor analyses. Whereas it failed to load coherently on any factor for Grimes, it loaded on the second, indirect factor for Duke. The ubiquity and impact of the placebo effect is well documented (for a review, see Kihlstrom, 2003). We chose to include this method of suggestion because of its importance to the psychotherapeutic and biomedical fields. We hypothesized that placebo responsiveness might load on the indirect suggestibility factor.

The ninth and final measure was conformity, which was based on Asch’s classic studies (Asch, 1951, 1955). This measure of conformity examines the tendency of people to alter their observations based on the ways in which their perceived peers (who are actually confederates) report erroneous observations. None of the previous suggestibility factor-analytic investigations used this standardized method of suggestion. We included this based on the importance of assessing the pressure to conform. We believed this type of suggestibility would likely load on the third, social influence factor.

11.3.1.2. How many factors in study 1?

The aim of Tasso *et al.*’s (2003) study was to examine the domain of suggestibility using factor-analytic methods. Whereas previous factor-analytic studies yielded inconsistent findings, especially in terms of a factor structure, we had *a priori* hypotheses in mind when planning this study. First, we hypothesized that there would be a delineated three-factor structure.

We hypothesized that: (1) the first factor would be of the direct, ideomotor type and would consist of hypnotizability, Chevreul pendulum and the body sway measures; (2) the second factor would be of the indirect type and would consist of the odor test, progressive weights and placebo responsiveness; and (3) the third factor would be of the social influence type and would consist of conformity, persuasibility and interrogative suggestibility. However, before describing the results of the factor analysis, it is worth describing the correlations between measures.

The correlations between our nine measures of suggestibility were anything but remarkable. Results of the matrix revealed low intercorrelations between variables. There were only three statistically significant correlations ($P < 0.05$), with the strongest relationships between persuasion and interrogative suggestibility (+0.228), and between body sway and interrogative suggestibility (+0.188). What about hypnotizability? Its strongest relationship was with persuasibility (+0.188). Such weak intercorrelations suggest that the different measures of suggestibility were distinct from one another. However, we persisted with procedures to identify the factor structure of our suggestibility measures.

First we looked at our *a priori* three-factor model. Although we hypothesized that specific variables would load on specific factors (as described above), a different factor loading emerged. Chevreul pendulum and progressive weights loaded on the first factor; the odor test, hypnotizability and persuasion loaded on the second factor; and, conformity, interrogative suggestibility, placebo and body sway loaded on the third factor. Furthermore, the relationship between factor 1 and factor 2 suggested that they essentially measured the same thing. What does this mean about the methods of suggestion and how they hang together? First, it demonstrates that the suggestibility measures that we hypothesized would load together—several of which have done so previously—were scattered; i.e. the suggestibility measures that we presumed to be similar did not tap similar abilities of participants. Second, our finding of a strong correlation between two of the factors undermines any notion of a three-factor model of suggestibility.

Although our *a priori* three-factor hypothesis model was disconfirmed, we decided to try

to clarify the domain of suggestibility by testing a two-factor model. Chevreul pendulum, body sway, progressive weights, placebo responsiveness and interrogative suggestibility loaded on the first factor. Hypnotizability, the odor test, persuasion and conformity loaded on the second factor. Although the two factors appeared to be independent, close examination of the loadings of each specific suggestibility measure revealed that no measure even broached statistical significance. Because of this lack of statistical significance, we had to reject the two-factor model of suggestibility.

Finally, we decided to test a one-factor model of suggestibility. Although we hypothesized neither a one-factor, nor a two-factor, explanation of suggestibility, testing this final possibility provides the most complete examination of the nature of suggestibility. However, as with both three- and two-factor models, there was not a hint of a one-factor model of suggestibility. Given the lack of statistical significance of the specific suggestibility measures, the domain of suggestibility cannot be explained by a single factor.

In summary, our hypothesis that the domain of suggestibility can be explained in a three-factor model was disconfirmed. Nor were two- or one-factor models equal to the task. No clearly delineated factor structure emerged. Indeed, the weak correlations between measures leads us to conclude independence of the measures within the domain of suggestibility. Based on this study, suggestibility seems to be neither ‘one attribute’ nor even a bundle of related attributes. One implication of this study, then, is that when researchers and theorists invoke the operation of suggestion to explain aberrations in memory, sensation, attitude, judgment and medical status, they probably ought to be mindful that they are describing a rather narrow, situation-specific reactivity, not a disposition.

11.3.2. Study 2: suggestibility and the senses

Although Tasso *et al.*'s (2003) study indicated that suggestibility is neither a unitary construct nor a multifactor construct with a clearly delineated factor structure, we wanted to continue our factor-analytic investigation of the domain

of suggestibility by focusing our attention on sensory suggestions. As discussed above, sensory suggestions are an important part of the domain of hypnosis, but their relationship to the broader domain of suggestibility remains unclear. Also as noted above, early factor-analytic studies included very few sensory suggestions (e.g. Eysenck and Furneaux, 1945; Grimes, 1948; Benton and Bandura, 1953; Stukát, 1958; Duke, 1961; Hammer *et al.*, 1963), although later studies paid more attention to whether sensory suggestions form a coherent subtype of suggestibility (e.g. Cautela and McLaughlin, 1965; Gheorghiu and Reyher, 1982; Gheorghiu *et al.*, 2001, 2003; Tasso *et al.*, 2003). In this second study, we (Perez *et al.*, 2004) examined whether response to sensory suggestions loads as a single factor or has a multiple factor structure. To test this, our second study required a thoughtful selection of sensory suggestibility measures that have been used across the literature and have been found, at times, to load on the same factor. Of course, we kept in mind that our first study found no coherent factors in the domain of suggestibility. Would sensory suggestibility prove different?

11.3.2.1. Testing suggestibility in study 2

Based on previous factor-analytic work on the construct of suggestibility, we tested three possible factorial models of sensory suggestibility, which targeted four sensory modalities: tactile, auditory, visual and olfactory (we did not use gustation measures in this study because it is inherently connected with olfaction). The three factorial models tested were: (1) that response to sensory suggestibility is a unitary construct; (2) that response to sensory suggestibility has a two-factor structure corresponding to Gheorghiu and Reyher's (1982) initiation and intensification distinction; and/or (3) that response to sensory suggestibility is sensory modality dependent. In other words, if the one-factor model emerges, all administered measures of sensory suggestibility would group into one coherent structure. If the two-factor model emerges, the measures would fall into two distinct factors based on whether: (1) the test involves ‘initiation’ (i.e. the stimulus does not exist, but the participant reports sensing it following the experimenter's suggestions); or

(2) the test involves ‘intensification’ (i.e. the stimulus actually exists, and the participant reports sensing it as intensifying following the experimenter’s suggestions). If the four-factor model emerges, the measures would fall into four separate factors, one for each sensory modality: auditory, visual, tactile and olfactory.

We tested 145 undergraduate college students on nine measures of suggestibility: hypnotizability and then eight sensory measures. Like Study 1, our study consisted of two phases: an in-class group measure of hypnotizability and individual laboratory testing of the sensory measures. The first measure was hypnotizability. We again used the HGSHS:A (Shor and Orne, 1962) to provide hypnotizability scores as part of an undergraduate introductory psychology course.

In a separate, individual laboratory session, we administered the eight sensory suggestibility measures: the watch test, the tone test, the black disk test, the light test, the hand test, the glass test, the odor test and the lemon test. Due to our interest in identifying the factor structure of sensory suggestibility, we selected measures that had been established and used in previous research (e.g. Cautela and McLaughlin, 1965; Gheorghiu and Reyher, 1982; Gheorghiu *et al.*, 2001, 2003). Also, we selected measures that were used in previous factor analyses—measures with the potential to tap indirect methods of suggestion (e.g. Eysenck and Furneaux, 1945; Stukát, 1958; Hammer *et al.*, 1963). Of the eight selected measures, two targeted each of the four sensory modalities; one was selected to sample the ‘initiation’ type and one the ‘intensification’ type. In other words, each modality was tested with a suggestibility measure that targeted either initiation or intensification.

The auditory measures were the watch test and the tone test (Gheorghiu *et al.*, 1975). The watch test (initiation) involves moving a non-working stop-watch toward the participant’s ear while suggestions are given that actual ticking will be detected and, thus, the participant will be able to hear it. The tone test (intensification) involves presenting the participant with a recording of a tone playing at constant volume while suggestions are given that the tone is getting progressively louder. The participant is asked to report when a change in volume is detected. Stukát (1958) included a version of the watch

test as a measure of auditory suggestibility in his factor analysis.

The visual measures were the black disk test and the light test (Gheorghiu *et al.*, 1975a,b; Hajek and Spacek, 1987). The black disk test (initiation) involves asking the participant to notice a green dot that does not actually exist in the center of a black disk. The light test (intensification) involves asking the participant to stare at a light bulb of constant intensity, while the experimenter suggests that the light will progressively become brighter. Measures of visual suggestibility were also included in early factor analytic studies (e.g. visual test; Stukát, 1958).

The tactile measures were the hand test and the glass test (Gheorghiu *et al.*, 2001). The hand test (initiation) involves the participant sensing heat from a supposedly heated hand when the hand is not in fact heated. The glass test (intensification) involves suggestions for a glass getting heavier as the experimenter pretends to pour additional liquid into it while the participant holds it in his or her hand. Eysenck and Furneaux (1945) included a heat illusion test in their factor-analytic study of suggestion, which loaded on their second, indirect factor. Hammer *et al.* (1963) included two tactile sensory tests in their study (heat illusion test and heat imagery test).

The olfactory measures were the odor test (Abraham, 1962) and the lemon test (Council and Loge, 1988). The odor test (initiation) involves giving the participant suggestions that odors exist in three bottles that actually contain only water. This olfactory test has been widely used in studies of suggestibility (Eysenck and Furneaux, 1945; Grimes, 1948; Stukát, 1958; Duke, 1961), including in our first study (Tasso *et al.*, 2003). The lemon test (intensification) involves participants being asked to smell nine small containers with a constant lemon odor while the experimenter suggests that the ‘lemony odor’ will become more intense with each bottle (although there is no change in the actual intensity of the smell).

We conducted a factor analysis, as in our previous study (Tasso *et al.*, 2003), but this time we conducted two separate analyses to test our three different models of sensory suggestibility: the one-factor model (sensory suggestibility is one construct), the two-factor model (sensory

suggestibility is two constructs: initiation and intensification) or the four-factor model (sensory suggestibility is organized by modality). These two analyses used an exploratory method and a confirmatory method. These two methods were chosen to allow the data to reveal findings, as well as to test the *a priori* models. Whereas the exploratory method allowed the factors to reveal themselves without statistical restrictions, the confirmatory method imposed on the data each one of the three model that was being tested. In other words, the exploratory method lets the data reveal whether and how the suggestibility measures cluster together, whereas the confirmatory method specifically tests whether the one-factor model, two-factor model or four-factor model was supported. Further, each one of the analyses was conducted with the variables in a dichotomous form (yes or no, depending on whether the participant sensed the stimulus or stimulus change), as well as in a continuous form (yes or no, but including how certain the participant was in sensing the stimulus or stimulus change).

11.3.2.2. Preliminary analysis

Our first step was to examine the correlation matrix. There were no significant relationships between hypnotic responsiveness and any of the sensory suggestibility measures. This once again implies the independence of hypnotizability. More importantly in the context of the study's aims, the intercorrelations between all sensory suggestibility measures were weak and mostly statistically insignificant. In fact, there were only 10 significant correlations out of 64 possibilities, with the strongest relationship between the hand (tactile initiation) and the black disk (visual initiation) measures ($r = 0.294$), and the weakest relationship between the light (visual intensification) and the odor (olfactory initiation) measures ($r = 0.003$). Similar results were observed in the preliminary analysis of variables in their continuous form. Once again, results of the matrix revealed low intercorrelations between variables (i.e. eight statistically significant correlations out of 64 possibilities). Again, the strongest relationship was between the hand and the black disk measures ($r = 0.325$), and the weakest relationship was between the odor and the black disk meas-

ures ($r = 0.164$). So, although our first and second studies used different measures, the correlation matrices both revealed unremarkable relationships between measures.

11.3.2.3. Exploratory factor analysis

Although our preliminary analyses did not suggest obvious relationships between the suggestibility measures used, we persisted with procedures to test the factor structure of sensory suggestibility. The exploratory factor analysis allowed variables to group according to how well they related to each other, based on latent characteristics. This allowed us to interpret emerging factor models without pre-imposed statistical parameters. For this step, we included all our sensory tests except the hypnotizability measure, whose weak correlation with the sensory measures suggested that it was better excluded.

None of our three *a priori* hypothesized factor models emerged in initial exploratory analysis of the dichotomous variables. Instead, exploratory analyses revealed a three-factor structure with little theoretical sense. The lemon, odor, black disk and hand measures loaded on factor 1, which accounted for 20.61 percent of the variance. The lemon, light, tone and glass measures loaded on factor 2, which accounted for 19.15 percent of the variance. And, the light, glass, odor and watch measures loaded on factor 3, which accounted for 13.98 percent of the variance (note the overlap of certain measures on factors as factor loadings were not mutually exclusive). Similar exploratory analysis of the continuous variables revealed the same theoretically and empirically confusing three-factor structure. The lemon, glass, odor, black disk and hand measures loaded on factor 1, which accounted for 21.60 percent of the variance. The light and tone measures loaded on factor 2, which accounted for 16.34 percent of the variance. And, the odor, watch and hand measures loaded on factor 3, which accounted for 13.65 percent of the variance.

11.3.2.4. Confirmatory factor analysis

Despite support for any of the three hypothesized factor models in the exploratory analysis, we conducted confirmatory factor analyses. This analysis allowed us to test the hypothesized factor models directly by imposing structural limits that determine, through statistical calculation,

how well a set of observed data (i.e. the variables selected under each factor) matches a theoretical probability (i.e. our hypothesized factor models). In other words, we told the variables to load under a single sensory suggestibility factor for our first factor model, and we told the variables to load under their corresponding ‘initiation’ or ‘intensification’ factors for the second factor model. Unfortunately, because of limitations of the statistical software, we could not test our third hypothesized model, where we expected the variables to load onto four factors according to sensory modality; the software required at least three measures or variables for any imposed factor, but we had only two variables for each sensory modality. However, for the one- and two-factor models, we tested both dichotomous and continuous variables, as in our exploratory analyses.

For the dichotomous variables, the confirmatory factor analysis of our one-factor structure or ‘g’ factor of sensory suggestibility failed to emerge statistically. Although the probability level in this model seemed to confirm a goodness of fit, a closer look at the data revealed that the watch measure did not reach statistical significance (with a probability level of 0.385). This forced us to reject the one-factor model for the dichotomous variables. We next tested our hypothesized two-factor model of sensory suggestibility. Overall, the probability level indicated that this was not a good fitting model; two of the measures (the watch and hand tests) did not reach statistical significance. So, our one- and two-factor models of the dichotomous data were disconfirmed, which indicates that dichotomously scored sensory suggestibility measures do not fit any clearly delineated factor structure. For the continuous variables, the same findings emerged. Although initially it appeared as though the analysis yielded an adequate goodness of fit for both the one- and two-factor models, a closer look at the tests loading under each factor revealed that several of our variables did not reach statistical significance. So, our one- and two-factor models of the continuous data were disconfirmed.

Summing up, both the exploratory and confirmatory factor analyses of the sensory measures in their dichotomous and continuous form yielded no clearly delineated factor structure of

sensory suggestibility. Collectively, the analyses conducted in this study failed to support any of our tentative hypotheses that sensory suggestibility measures would covary together in some coherent fashion. Taken together with our first study, this study adds strength to the conclusion that there is little evidence for either a ‘g’ factor of sensory suggestibility or a coherent factor structure.

11.3.2.5. Reliability analysis for sensory suggestibility

In a final attempt to make sense of sensory suggestibility, we performed a reliability analysis of our sensory suggestibility measures. This analysis allowed us to determine how well these sensory tests, if clumped together in a scale, would measure the same construct—sensory suggestibility as a subtype of suggestion. This is determined by a Chronbach alpha score, which tells us how reliably we are measuring what the scale attempts to measure. Although our factor-analytic findings gave us little reason to expect support for an omnibus sensory suggestibility scale, as it did in previous studies (e.g. Gheorghiu *et al.*, 2001), we ran the analysis in any case. As suspected, the reliability analyses for both scoring conditions (dichotomous and continuous) did not reveal a reliable sensory suggestibility scale. Results for our reliability analysis of the variables in their dichotomous form with a total of eight items yielded a Chronbach’s alpha of 0.567, increasing only to 0.599 when the watch test was deleted. Such results are not indicative of a highly reliable scale (contemporary standards suggest a value above 0.700). Results for our reliability analysis of the variables in continuous form did not meet these standards either, with a total of eight items yielding a Chronbach’s alpha of 0.538, increasing only to 0.576 when the watch test was deleted.

Overall, the findings of this second study do not support a unitary trait or ‘g’ factor of sensory suggestibility. This is consistent with the findings of our previous study (Tasso *et al.*, 2003) which found no evidence of a coherent structure of suggestibility. In fact, the present study seems to suggest that the way in which a person responds to a given sensory test is not predictive of how a person will respond to any other sensory measure, even when the measures

are designed to elicit perceptions from the same sensory channel. Furthermore, we can conclude that the way in which someone responds to a suggestion of a so-called ‘initiation’ or ‘intensification’ type of sensory suggestion does not predict the way in which s/he will respond to a test in a different modality but of the same type. Based on these two studies we conclude that there is no empirical evidence to support the notion of a unitary factor or multiple factor structure of either ‘general’ suggestibility or sensory suggestibility. In addition, we must conclude that hypnotizability functions as an independent phenomenon. Of course, the conclusions offered in this study do not deny the possibility that a person may use similar underlying psychological factors to respond to sensory suggestions, or that sensory suggestions can elicit a suggestive effect in a similar way; but such determinations cannot be made here, nor do they appear to be evident. Whatever commonalities exist between these types of measures, they appear to be less salient than their differences.

11.3.3. Study 3: the ‘suggestible’ personality

As noted earlier in this chapter, the concept of nonhypnotic suggestibility as a component of personality was the focus of earlier theories and research (e.g. Binet, 1900; Averling and Hargreaves, 1921). Empirical findings, however, yielded equivocal results of the relationship between suggestibility and specific personality types or traits (Lindberg, 1940; Furneaux, 1961; Evans, 1963; Rickels *et al.*, 1964; Barber and Smith-Calvery, 1965; Gudjonsson, 1983; Haraldsson, 1985; Nordenstrom *et al.*, 2002; Green, 2004). This poses a problem in labeling individuals as ‘suggestible’ or ‘not suggestible’. Implicit in such references is the notion that the underpinnings of suggestibility are dispositional in nature—that the ability to be or not be suggestible is based in some inherent characteristic(s). Because of the lack of any consistent discernible pattern connecting suggestibility with personality in past research, we conducted a final study of the domain of suggestibility, which focused on possible correlates with trait-like personality factors.

11.3.3.1. Testing personality as a predictor of suggestibility in study 3

In this study, we (Perez *et al.*, 2005) examined the relationship between five contemporary personality traits: openness, conscientiousness, extraversion, agreeableness and neuroticism (commonly known as ‘The Big Five’; John *et al.*, 1990), and tests of suggestibility, including hypnotizability. Based on the variability of findings of previous suggestibility–personality studies, even those identifying a discernible pattern between variables (e.g. Lindberg, 1940; Furneaux, 1961; Rickels *et al.*, 1964; Van Hook and Steele, 2002), this study was predominantly exploratory.

We tested 106 undergraduate psychology students on 12 measures of suggestibility. To measure the five targeted personality traits, we used a 44-item scale, a short version of the NEO Five Factor Inventory developed by John *et al.* (1990) known as the Big Five Inventory (BFI). The 12 suggestibility measures were a combination of those used in our Studies 1 and 2: hypnosis, the watch test, the glass test, the hand test, the black disk test, the light test, the tone test, the lemon test, the odor test, progressive weights, body sway and Chevreul’s pendulum test. Suggestibility measures were analyzed in their dichotomous form (i.e. yes or no, depending on whether the participant responded to a suggestion or not) and their continuous form (i.e. yes or no, but including how certain the participant was of their response to the suggestion).

11.3.3.2. Preliminary analysis

Our first step was to examine the correlation matrix. Our data revealed only weak correlations between the measures of suggestibility and the five personality traits. Amongst our dichotomously scored variables, the lemon test correlated positively with openness ($r = 0.247$), while the tone and glass tests both correlated positively with neuroticism ($r = 0.202$ and $r = 0.204$, respectively). Amongst our continuously scored variables, body sway correlated negatively with extraversion ($r = -0.247$) and the tone test correlated negatively with neuroticism ($r = -0.237$). Consistent with previous research on correlates of hypnotizability, HGSHS:A scores correlated positively with extraversion ($r = 0.297$), but there were no other relationships with the personality

traits. Such weak relationships between the suggestibility measures and the personality variables suggested that discernible patterns would be unlikely in additional analyses. However, we decided to apply regression analysis to examine the potential predictive abilities of suggestibility and the big five personality traits. Due to the consistently insignificant relationship between hypnotizability and personality variables, we excluded it from the regression analysis (for more, see Laurence *et al.*, Chapter 9, this volume).

11.3.3.3. Regression analysis

In a regression analysis, we explored whether the five personality traits (conscientiousness, openness, agreeableness, neuroticism and extraversion) predict any of the 11 measures of suggestibility. If so, we could argue that a specific personality type is predictive of a specific type of suggestion. However, as with our preliminary investigations, only weak relationships emerged. Of all the models tested (one for each of the five personality types), only neuroticism reached statistical significance ($F = 2.19$, $df = 11$, $P = 0.024$). However, when taking a closer look at the coefficients (the values of each of the individual suggestibility tests included in the model), just three of the 11 suggestibility measures (the odor, glass and tone measures) had acceptable significance. When we applied regression analysis to each of the personality types and the suggestibility measures in their continuous form, this particular model, as well all other models, failed to reach significance. These results suggest that none of the five personality traits consistently predicts measures of suggestibility.

In conclusion, the findings of this third study are consistent with the inconclusive results of previous investigations exploring the relationship between suggestibility and personality traits. Whereas some early studies found modest relationships between response to suggestions and personality factors (e.g. Lindberg, 1940; Furneaux, 1961; Rickels *et al.*, 1964; Van Hook and Steele, 2002), others—including our own—failed to do so (e.g. Barber and Smith-Calvery, 1965; Nordenstrom *et al.*, 2002; Green, 2004; Perez *et al.*, 2005). As in our first two studies, no coherent pattern or relationship emerged within the domain of suggestibility. This suggests that

there is no discernible personality factor consistently predictive of suggestibility of any kind. Therefore, theorists and researchers alike must be mindful that it may be incorrect to assume that a person's response to suggestion is based on a latent disposition.

11.4. Future directions and implications for hypnosis

What can be concluded from research on the domain of suggestibility? One inevitable conclusion is that there is no domain, but rather *domains*. While several early studies found some indication of a first factor of the direct, explicit behavioral expression of a desired suggestive response (Eysenck and Furneaux, 1945; Stukát, 1958; Duke, 1961; Hammer *et al.*, 1963), other investigations did not (Grimes, 1948; Benton and Bandura, 1953). And notably, the most recent factor-analytic investigations (Tasso *et al.*, 2003; Pérez *et al.*, 2004) failed to find even a hint of a first factor. These findings of no emergent direct, behavioral factor structure are not to be taken lightly. What must be inferred from these studies is that although the directive, ideomotor aspects of these suggestions may appear to be similar, they clearly are unique. What appears to be common may in fact be independent abilities for each suggestion.

Previously purported 'indirect' suggestibility measures (e.g. placebo responsiveness, sensory measures, progressive weights) also do not hold together in contemporary studies. Even in early studies, when this factor emerged it was weak at best (Eysenck and Furneaux, 1945; Stukát, 1958; Duke, 1961; Hammer *et al.*, 1963). Others did not find this factor at all (Grimes, 1948; Benton and Bandura, 1953; Tasso *et al.*, 2003). When only sensory suggestibility measures are examined, as in our Study 2 (Perez *et al.*, 2004), these measures load independently. It is clear, as with purported first factors, that these nondirective suggestive measures are independent of one another, and apparently tap into unique suggestive mechanisms.

Not surprisingly then, three- (or more) factor models were also not evident. In Tasso *et al.*'s (2003) study, we hypothesized that social influence measures such as persuasion,

conformity and interrogative suggestibility would load on a single factor. These types of measures, which are similar to Eysenck's (1947) concept of prestige, or tertiary, suggestibility, were not clearly examined in early factor-analytic investigations. Stukát (1958) made some attempts to assess a person's level of responsiveness to this type of suggestion (e.g. the color test, contradictory tests, co-judge suggestions), although these measures lacked the rigid operationalization of more contemporary tests (Gudjonsson, 1984, 1987). The results of Tasso *et al.*'s (2003) study were similar to our hypothesized factors: weak correlations between measures (with the single exception of a 0.228 correlation between interrogative suggestibility and persuasion). This hypothesized factor (as with previous ones from this study) did not form a coherent group, implying that these measures can also be considered independent from other methods of suggestion.

Taken together, these findings are of great contemporary relevance, especially in the domain of hypnosis. Although some propose that there is little difference between hypnotic responsiveness and nonhypnotic suggestive situations, and that suggestion is the basis for hypnotic responsiveness (e.g. Barber, 1969; Wagstaff, 1991; Kirsch 1997; Braffman and Kirsch 1999; and Kirsch and Braffman, 2001), the results described in this chapter indicate that hypnotic responsiveness (as with other measures of suggestibility) is an independent phenomenon (see also Laurence *et al.*, Chapter 9, this volume). This is in line with previous studies (Hilgard, 1973, 1991; Bowers, 1983; De Pascalis, 1989; Edmonston, 1989; Evans, 1989; De Pascalis *et al.*, 1998). Whereas some studies reported a positive relationship between hypnotic responsiveness and single items on standardized hypnosis scales such as body sway (White, 1930; Hull, 1933; Eysenck and Furneaux, 1945), Tasso *et al.*'s, (2003) study did not (Perez *et al.* did, but only with body sway). Hypnosis does not appear to be simply nonhypnotic suggestibility; it must be considered as an independent phenomenon, which is related to a set of unique (as yet unknown) abilities.

These findings are also relevant to the domain of memory. As illustrated by the influential work of Elizabeth Loftus, the plasticity of human memory has been well established in the

scientific literature (Loftus, 1979, 1993; Gudjonsson, 1984, 1987, 1989; Gudjonsson and Clare, 1995; Hyman *et al.*, 1995; Loftus and Pickerell, 1995; Malinoski and Lynn, 1999; Heaps and Nash, 2001). And the 'hypermal-leability' of memory has also been demonstrated within the hypnotic situation (Nash *et al.*, 1986; Nash, 1987; McConkey, 1992; Kihlstrom, 1998; Lynn *et al.*, 2000). Together, research and relevant practice highlights the sensitivity of memory to suggestion. However, even this statement seems limited. When commenting on the malleability of memory, we must be mindful that we are describing a narrow, situation-specific method of suggestion such as misleading questions (see Ceci and Bruck, 1995). Given the findings reviewed in this chapter, talking about suggestibility in a catch-all way in the context of memory performance, or any other performance, appears both limited and misguided.

Suggestibility is not one thing. Someone cannot be said to be suggestible or nonsuggestible, nor does it seem appropriate to refer to waking or nonwaking suggestibility. This nomenclature is nondescriptive at best, and probably meaningless. We know that suggestion and suggestibility are constantly at play and account for a large portion of who we are and what we do. For this reason, when discussing the nature of the way(s) in which people respond to a direct or indirect form of communication it is imperative to explicate how the suggestive information is being communicated, and in which way a person is responding. Judicious use of the terms suggestion and suggestibility is essential not only to understand accurately exactly how a person is responding to a suggestion but also to understand better the nature of *suggestibilities* in everyday life.

11.4.1. Areas for future research

One hundred years of research on suggestibility has left us with as many questions as answers. For this reason, there are several specific areas for future research. One area is investigating suggestive responsiveness within a range of populations. A timely update and extension of factor analyses with children (Grimes, 1948; Stukát, 1958) and the neurologically impaired

(Eysenck and Furneaux, 1945; Duke, 1961) is well overdue. Also, studies involving people with psychiatric conditions that imply a propensity for hyper-responsiveness to suggestive communications (e.g. conversion disorders, somatoform conditions) would help to shed light on the underpinnings of psychogenic pathologies. Finally, programmatic research within forensic settings would help to avoid serious mistakes that even inadvertent suggestions have on eye-witness testimony, memory recall and jury deliberation, to name a few.

Another area of future research is examining the relationship between self-reported suggestibility and behavioral measures of suggestibility. None of the factor-analytic studies, including our recent ones, used self-report attitudes towards suggestibility. This is a problem. Although the weak relationship between attitudes and behaviors is long known (Wicker, 1969), examining subjective suggestive experiences with tangible behavioral outcomes (just as we do within the hypnosis field) allows for a richer, more thorough understanding of the phenomena of suggestibility.

While the domain of suggestibility currently has as many questions as answers, this is something that must and can change. Psychological science should make concerted efforts to investigate systematically the domain of suggestibility to provide greater insight into the breadth of areas influenced by suggestion. Further conceptual development and intensive empirical investigations will help to clarify this misunderstood but important construct.

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CHAPTER 12

Advances in hypnosis research: methods, designs and contributions of intrinsic and instrumental hypnosis

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12.1. Introduction

In their continuing struggle for scientific recognition, hypnosis researchers have always been concerned about methodological techniques. Sutcliffe (1958, 1960) argued that the fundamental difficulty in convincing people about the genuineness of hypnotic effects is that hypnosis is essentially a private experience. Thus, hypnosis has always been faced with the challenge of scientifically quantifying internal, subjective experiences. However, the ongoing need for hypnosis researchers to be meticulous about methodology has contributed to the development of rigorous hypnotic paradigms that are consistent with contemporary scientific methods and that have both influenced and been influenced by the broader discipline of psychology. These paradigms attempt to control for a variety of factors associated with hypnosis research, such as the role of the hypnotic induction and the complex demand characteristics associated with the

hypnotic setting. Notably, there is a strong link between hypnotic methodology and theory; the techniques selected by researchers typically reflect their theoretical orientation.

In addition to adhering to strict scientific principles, hypnosis researchers have been quite inventive in their experimental designs. For instance, researchers have developed innovative techniques to challenge the hypnotic subject's belief in the reality of their suggested experiences (McConkey and Sheehan, 1981) as well as novel ways of examining the individual's subjective hypnotic experience (e.g. the Experiential Analysis Technique (EAT), Sheehan and McConkey, 1982). Researchers have also administered hypnotic suggestions that push the boundaries of human behavior and social interactions, such as a suggestion for hypnotic sex change (Noble and McConkey, 1995; Burn *et al.*, 2001; McConkey *et al.*, 2001), post-hypnotic responding outside the hypnotic setting (Barnier and McConkey, 1998*a,b*), forgetting personal

events (Barnier, 2002; Cox and Barnier, 2003) and altering identity (Cox, 2007). An important consequence of these developments has been the links established between hypnosis research and the broader areas of cognitive psychology, social psychology and psychopathology (e.g. see Kihlstrom and Evans, 1979).

Although several fundamental research standards have been established, there is increasing awareness of the need to adopt converging methodologies to advance our understanding of hypnotic phenomena (Sheehan and Perry, 1976). We can improve our understanding of the mechanisms underlying hypnotic responding by using paradigms that reflect the basic principles of hypnosis research designs and that generate converging data. Accordingly, in this chapter we focus on a range of experimental techniques as opposed to clinical methods (for a summary of clinical methods, see Nash, Chapter 19, this volume). First, we present some core concepts associated with hypnosis research and describe foundational research that addresses these concepts. Then, we review areas of current research that illustrate these core concepts. Finally, we discuss new techniques and identify major challenges for future research in this field.

12.2. Core concepts and foundation research

12.2.1. Types of research

Joseph Reyher (1962) claimed that hypnosis research could be classified as either intrinsic and/or instrumental. Intrinsic research attempts to understand the phenomena of hypnosis itself and aims to identify the factors that underpin hypnotic responding. This line of research typically focuses on major theories of hypnosis (e.g. dissociated-experience, dissociated-control, socio-cognitive; see Chapters 4–8, this volume) and attempts to identify the cognitive, social or phenomenological antecedents to hypnotic responding. Intrinsic research often uses specific hypnotic suggestions as exemplars of hypnotic response, such as post-hypnotic amnesia, post-hypnotic suggestion, hypnotic hallucinations or analgesia.

In contrast, instrumental research uses hypnosis as a tool to investigate other phenomena.

For example, hypnosis allows subjectively compelling belief in a range of states that can mimic, in a fashion, psychological states often observed in psychopathological conditions. To illustrate this, during the 1960s Reyher and colleagues began to use post-hypnotic suggestions successfully to mimic pathological symptoms, such as repression and impulse inhibition (Reyher, 1961, 1962, 1969; Reyher and Basch, 1970; Burns and Reyher, 1976). Since then, researchers have used hypnosis instrumentally to study a variety of conditions including, for instance, functional amnesia using suggestions for post-hypnotic amnesia (Barnier and McConkey, 1999; Barnier, 2002; Cox and Barnier, 2003; Barnier *et al.*, 2004), false memories using suggestions for hypermnesia (McConkey *et al.*, 1998), paranoia using suggestions for deafness (Zimbardo *et al.*, 1981) and visual conversion disorder using suggestions for hypnotic blindness (Bryant and McConkey, 1989*a,b*, 1990) (for more discussion of intrinsic versus instrumental hypnosis, see Barnier *et al.*, Chapter 6; Oakley, Chapter 14, this volume).

The techniques used in intrinsic and instrumental research are generally similar. For instance, the type of participants, the hypnotic induction procedure and the structure of hypnotic suggestions are typically consistent across intrinsic and instrumental research. Also, there is often overlap in terms of whether particular hypnotic techniques are classified as intrinsic or instrumental. For example, post-hypnotic amnesia is an example of both intrinsic and instrumental research as it informs us about the nature of hypnotic forgetting (intrinsic) as well as mimics the type of memory loss seen in clinical conditions such as functional amnesia (instrumental). Of course, this overlap creates limitations as well as benefits. In particular, if hypnosis researchers are still attempting to understand the intrinsic aspects of hypnosis, then instrumental uses remain tentative.

Although the majority of discussion and controversy in the literature has surrounded intrinsic hypnosis research (Kirsch and Lynn, 1995; Nash, 2001; see also Kihlstrom, Chapter 2, this volume), there are enormous benefits of using hypnosis instrumentally. For example, clinical cases are often associated with a variety of confounding factors that are difficult, if not

impossible, to control. However, hypnosis is a technique that may allow pathological conditions to be studied in isolation without interference from the confounding factors associated with broad psychopathologies. In addition, using hypnosis instrumentally promotes links between hypnosis and areas of research that lie outside the domain of hypnosis. For example, hypnotic identity delusions provide a context in which theoretical models of identity delusions can be empirically investigated (Kihlstrom and Hoyt, 1988; Cox, 2007). Thus, hypnosis provides a powerful, novel technique for exploring a variety of psychological processes and facilitating research in external areas.

12.2.2. Fundamental design issues

Advances in hypnosis research require adherence to several fundamental designs that represent the minimum standard for examining hypnotic phenomena. Sutcliffe (1958) identified a number of important design issues and, in doing so, drew a distinction between general and specific designs. His general design was a comprehensive method involving multiple experimental conditions. The design involved high and low hypnotizables who were to receive suggestions for either the presence of nonexistent stimuli (e.g. a positive hallucination) or the absence of actual stimuli (e.g. a negative hallucination). In Sutcliffe's general design, suggestions were to be given under the following conditions: (1) a control, waking condition; (2) a hypnotic induction condition; (3) a hypnotic induction with hypnotic suggestion condition; and (4) a simulating while awake condition. Although extremely comprehensive, this general design has never been applied in practice in its entirety, largely because to do so would be extremely expensive and resource intensive. As a compromise, hypnosis researchers typically use what Sutcliffe referred to as specific designs. These specific designs involve selected control procedures, such as a comparison of high and low hypnotizables who receive either a hypnotic induction or waking instructions. Although specific designs may limit the inferences that can be drawn from the data, they provide a practical alternative to Sutcliffe's general design.

We now lay out five fundamental hypnosis research designs along with foundation research

illustrating the importance of these designs. The first four issues deal with hypnotizability, hypnosis, suggestion factors and demand characteristics, all of which were originally identified by Sutcliffe in his general design. The fifth issue involves design techniques that address experiential responding. In addition to describing these research designs, we highlight the importance of using converging methodological techniques to exclude alternative explanations for observed results.

12.2.2.1. Hypnotizability

Historically, hypnosis theory and research have repeatedly demonstrated the importance of hypnotizability in determining hypnotic response. Understanding the components of hypnotizability and individual differences in hypnotizability is crucial for understanding hypnosis. Highly hypnotizable individuals have certain characteristics that differentiate them from their low hypnotizable counterparts. For instance, highly hypnotizable individuals are very imaginative and use vivid imagery that is rich in detail (Hilgard, 1974; Kirsch and Braffman, 2001), they have the ability to become deeply absorbed in experiences (Tellegen and Atkinson, 1974; Tellegen, 1981; Roche and McConkey, 1990), they process information automatically (Dixon and Laurence, 1992) and they display distinct neural activity (Ray, 1997). Levels of hypnotizability are normally distributed in the population, have a genetic component (Morgan, 1973) and are considered a relatively stable, measurable trait (Hilgard, 1965; Morgan *et al.*, 1974). Accordingly, any hypnosis research must evaluate the hypnotizability of the participants who are studied (for a review of correlates, see Laurence *et al.*, Chapter 9, this volume).

As outlined by Woody and Barnier in Chapter 10, there are numerous, well-validated scales to assess hypnotizability (see also Barnier and McConkey, 2004). The optimal means for assessing hypnotizability is to screen initially large numbers of potential participants in group formats to identify those who are likely to be of interest. For example, the group-administered Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor and Orne, 1962) can be used to select participants who are potentially high, medium or low hypnotizables. Rigorous hypnosis

research should then confirm participants' hypnotizability by administering a subsequent individual scale. One of the most common individually administered scales is the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer and Hilgard, 1962). In a clinical context where a briefer scale is required, abridged versions of longer scales, such as the Stanford Hypnotic Clinical Scale for Adults (Morgan and Hilgard, 1978–1979) may be used. It is important to verify an individual's hypnotizability with an individually administered scale as this provides a more accurate index of hypnotic susceptibility (but see Woody and Barnier, Chapter 10, this volume, for a different approach).

Consideration should also be given to what it means to be classified as highly hypnotizable and whether an individual who is classified as high on one scale will also be classified as high on other scales. On behavioral scales of hypnotizability, such as the HGSHS:A and the SHSS:C, each suggestion has a clear behavioral criterion that must be achieved in order to pass the suggestion. Of the 12 items on these scales, 5–7 percent of individuals pass 11–12 items and are labeled very high or 'virtuoso', and 17–34 percent of individuals pass 8–10 items and are labeled 'high' (Weitzenhoffer and Hilgard, 1962; Shor and Orne, 1963; Sheehan and McConkey, 1979; McConkey *et al.*, 1996). More individuals tend to be classified as high on the HGSHS:A than on the SHSS:C, but this is probably because the SHSS:C contains more difficult cognitive-perceptual items than the HGSHS:A, and is thus more discriminating.

12.2.2.2. Hypnosis

There is ongoing debate as to whether hypnosis is an altered state that is fundamentally different from a waking state (e.g. see Kihlstrom, Chapter 2; McConkey, Chapter 3; Lynn *et al.*, Chapter 5; Barabasz and Barabasz, Chapter 13; this volume). Historically, hypnosis was believed to be a unique state which promotes hypersuggestibility and was thought to have a significant impact on responsiveness to suggestions. However, a number of theorists (Sarbin, 1950; Barber, 1969) disagreed with the idea that hypnosis is an altered state and believed that hypnotic behavior could be accounted for by imagination, belief, expectation, attitude, ability

and interpretation of suggestions (Spanos and Barber, 1974; Barber and Wilson, 1978). According to these theorists, a hypnotic induction is not necessary for hypnotic responding, and highly hypnotizable individuals can experience hypnotic phenomena in their waking state (see Lynn *et al.*, Chapter 5, this volume).

Barber (1965) noted that the majority of hypnotic inductions consist of a number of antecedent variables that can potentially influence hypnotic responding including: (1) defining the context as hypnosis; (2) suggestions for relaxation; (3) instructions to try to experience the suggested effects; and (4) comments implying that the suggested effects will be relatively easy to experience. To attempt to control for these variables, Barber and Calverley (1962, 1963) assigned participants to one of three conditions. The first involved a standard hypnotic induction. The second involved 'task motivational' instructions where participants received imagination instructions and motivation to experience the suggested effects. The third was labeled 'base-level' where participants were informed that they would be completing a test of imagination. Following administration of the Barber Suggestibility Scale (Barber, 1965), Barber and Calverley (1962, 1963) found no differences in hypnotic responsiveness between participants who received a hypnotic induction and those who received task motivational instructions. In addition, both the hypnotic induction and task motivational groups responded to more suggestions than the base-level group. Barber and Calverley concluded that hypnosis is not a special state responsible for producing hypnotic effects. It has since been widely demonstrated that people are responsive to suggestions in the absence of a hypnotic induction (Bowers and Kelly, 1979). However, recent research suggests that a hypnotic induction may promote and facilitate hypnotic effects, depending in part on the nature of those suggested effects. For example, McConkey *et al.* (2001) compared the impact of a hypnotic induction with waking, imagination instructions on response to a hypnotic identity delusion. High and low hypnotizables received a suggestion to become the opposite sex and used a dial to indicate changes in the strength of the suggested effects. Although a similar number of participants in the hypnosis

and waking conditions experienced the sex change, their dial ratings indicated that those in the hypnosis condition experienced the onset of the sex change more rapidly than those in the waking condition. This suggests that a hypnotic induction may facilitate suggested effects to a greater extent than waking instructions (for a related view, see Barnier *et al.*, Chapter 6, this volume).

The majority of hypnotizability tests typically include a hypnotic induction that plays the important role of defining the context as being hypnotic. However, one of the most common confounds in hypnosis research designs is to conduct a study, following hypnotizability assessment, of high and low hypnotizables who all receive a hypnotic induction. The obvious confound in this design is between hypnotizability and hypnosis, such that we can never know if observed effects are due to participants' level of hypnotizability or to the hypnotic induction. To address this issue, researchers can employ a nonhypnotic induction and test the effects of suggestions that are administered in a nonhypnotic state. For instance, some research has used an imagination instruction as a nonhypnotic induction (e.g. McConkey *et al.*, 1991), but this approach can be problematic because imagination instructions can be perceived similarly to hypnotic instructions. An alternative approach is to give participants a task that is clearly nonhypnotic (such as a geometric exercise) for the same amount of time as a hypnotic induction, and then proceed with suggestions. This allows for the effect of a suggestion to be compared following a hypnotic induction and following a task that has no relationship to hypnosis. Even this design can be problematic, however, because participants who have been previously assessed on group and individually administered hypnotizability scales may interpret suggestions as 'hypnotic' due to their previous associations between similar suggestions and hypnosis. Consequently, it is advisable that researchers choose and justify the selection of one of these options.

12.2.2.3. Suggestion differences

An important aspect of hypnosis research involves incorporating suggestion variations into the experimental design. One of the comparisons

suggested by Sutcliffe (1958) in his general design was between a hypnotic induction with specific suggestions and a hypnotic induction without specific suggestions. Manipulating the presence versus absence of a suggestion is a useful technique for identifying the distinctive contributions of a hypnotic induction and a specific comparison with performance during or after hypnosis. For instance, a researcher might compare performance during hypnosis on a Stroop task either following a suggestion that the subject is unable to read words or following no suggestion. More typically, researchers compare the impact of different versions of a hypnotic suggestion. For instance, a researcher might compare performance during hypnosis on a Stroop task either following a suggestion that the subject is unable to read words or following a suggestion to focus only on the last letter of each trial word (e.g. Hung and Barnier, 2004, 2005). Such variations in the suggestion itself can be used to examine different strategies for responding or the manner in which subtle differences in instruction influence responding.

One illustration comes from work on posthypnotic suggestion by Barnier and McConkey (1998a). They gave highly hypnotizable individuals a post-hypnotic suggestion to mail one postcard every single day to the experimenter. Half of the participants were told to keep mailing until the experimenter contacted them again and half were simply told to keep mailing. Participants who received the suggestion to respond for a limited duration (until they were contacted again) sent far more postcards than those given the suggestion of unlimited duration. This subtle variation in the wording of the post-hypnotic suggestion yielded theoretically (and clinically) interesting differences in subjects' responding (see also McConkey, Chapter 3; Barnier *et al.*, Chapter 6, this volume). Similarly, Cox and Barnier (2003) explored the impact of two different versions of a post-hypnotic amnesia suggestion. During hypnosis, high and low hypnotizables elicited autobiographical memories from their first romantic relationship in response to cue words. One version of the post-hypnotic amnesia suggestion instructed participants to forget the specific relationship events they had elicited and the other version instructed participants to

forget the entire relationship. The suggestion to forget the entire relationship produced greater memory impairment for previously elicited memories than the suggestion to forget specific events. Thus, variations in the type of suggestion can provide important information about the locus of effect of particular hypnotic suggestions.

A third way in which suggestions can be manipulated in experimental designs is when hypnotic suggestions are directly compared in the same experiment with theoretically relevant nonhypnotic parallels. For example, a number of researchers have compared the similarities and differences in patterns of memory loss following a post-hypnotic amnesia suggestion (inside hypnosis) or directed forgetting instructions (outside hypnosis; e.g. Coe *et al.*, 1989; David *et al.*, 2000; Barnier, 2004). Of course, when interpreting the results of such comparisons, researchers must keep in mind that there are at least two factors that differ across the groups (the presence of an induction and the specific suggestion). However, these sorts of suggestion variations allow researchers to examine the relationship between (potentially related) hypnotic and nonhypnotic phenomena.

12.2.2.4. Demand characteristics

Potentially the biggest challenge facing hypnosis researchers is managing the possibility that an observed response is a function of the subject's compliance with perceived experimental demands (Orne, 1962, 1970). Many studies have demonstrated that the influence of demand characteristics is substantial within the hypnotic context, and this has led in part to the influential social psychological theories of hypnosis. For example, according to Sarbin's (1950) theoretical viewpoint, hypnotic behavior can be conceived in terms of role enactment or dramaturgical engagement. Sarbin's perspective was heavily influenced by dramatic acting literature, which indicated that actors become involved in their roles to varying degrees. Some actors commented that they often became so absorbed in their role that they found it difficult to distinguish their actual self from the role they were playing. Sarbin believed that individuals differed in the number of roles available to them, and those who were better at taking on new

roles were also better at hypnosis (for further discussion of Sarbin's theory, see Lynn *et al.*, Chapter 5, this volume).

The major paradigm available to researchers to index the potential role of demand characteristics on hypnotic responding is Orne's (1959, 1962, 1971, 1979) real-simulating paradigm. Orne claimed that all psychology experiments are influenced by artifact because both the participant and experimenter behave in ways deemed acceptable to the experimental context. According to Orne, the 'essence' of hypnosis lies in the subjective experience of the hypnotized individual. Consequently, Orne devised a technique to examine hypnotic behavior in the absence of possible artifact produced by the hypnotic context. According to Orne, experimental participants are motivated to adopt the role of a 'good' participant and their responses are influenced by the demand characteristics associated with the hypnotic setting. Demand characteristics encompass all the cues in an experimental setting that provide some indication as to the experimenter's hypotheses and the desired behavior of participants. In Orne's real-simulating design, the performances of real, hypnotized individuals are compared with those of individuals who are instructed to simulate or fake hypnosis (Orne, 1959, 1962). Real individuals are screened for their high hypnotizability and simulators are selected because of their low hypnotizability; this strategy ensures that simulators will not be hypnotized.

Two experimenters are involved in the paradigm: the first experimenter, who is aware of participants' real or simulating status, and the hypnotist, who is blind to participants' real or simulating status. The real-simulating paradigm is a resource-intensive procedure that requires a hypnotist who must remain blind to participants' real or simulating status throughout hypnotic screening procedures. To begin the real-simulating procedure, the first experimenter provides participants with real or simulating instructions. Reals are instructed to respond to the hypnosis session in their normal fashion and simulators are instructed to use whatever they know about hypnosis and whatever cues they can detect from the hypnotist to feign hypnotic responses successfully. Simulators also receive motivational instructions to ensure

that they engage fully in the exercise (e.g. ‘all intelligent participants have been able to do this task successfully’) and are told that if the hypnotist does not stop the experiment, then they are feigning their responses successfully. They are then introduced to the hypnotist who conducts the hypnosis session. Finally they return to the first experimenter who asks them a number of questions about the hypnosis session. Simulators are a quasi-control condition as their responses are an indication of the demand characteristics of the hypnotic setting. If the responses of reals and simulators are similar, then an explanation of real participants’ responses in terms of demand characteristics cannot be ruled out. However, if the responses of reals and simulators are different, it can be inferred that the reals were not responding to social cues alone (see also Sheehan and Perry, 1976).

In one of the earliest applications of the real–simulating design, Orne *et al.* (1968) examined post-hypnotic responding away from the experimental setting. Participants received real or simulating instructions and, during hypnosis, they received a post-hypnotic suggestion that over the next 48 h they would touch their foreheads every time they heard the word ‘experiment’. The experimenter formally tested response to the suggestion in the experimental setting but the two critical tests occurred later in the waiting room. On the first occasion, the receptionist sought confirmation from participants that they would return for the second part of the ‘experiment’ the following day. On the second occasion, when participants returned the following day, the receptionist asked if they had arrived for the ‘experiment’. Results indicated that both reals and simulators responded to the post-hypnotic suggestion on the formal test in the experimental setting. However, only real participants also responded on the critical tests administered by the receptionist. No simulating participants responded away from the experimental setting. Thus, this behavioral difference between reals and simulators suggests that reals were not responding simply to demand characteristics (see also Barnier and McConkey, 1998*a,b*).

One potential confound in the real–simulating paradigm is that reals and simulators differ in hypnotizability, but this difference is essential to

ensure that simulators are not being hypnotized. Another limitation is that alterations in subjective experience are only important to the extent that they are reflected in observable behavior. Thus, Orne’s real–simulating paradigm is strictly behavioral in nature and does not have the ability to tap differences in the internal, private experience of reals and simulators. However, the paradigm provides a scientifically rigorous technique for examining the influence of experimental cues on hypnotic responding, allowing inferences about the nature of hypnosis to be established.

12.2.2.5. Experiential responses

Researchers have acknowledged that an understanding of hypnotic behavior cannot be gained purely from examining behavioral responses to hypnotic suggestions. The internal, private experiences of a hypnotized individual are also crucial for developing a comprehensive understanding of hypnosis (Sutcliffe, 1958, 1960, 1961; Hilgard, 1969, 1971, 1973; Shor, 1970, 1979; Orne, 1972; Spanos and Barber, 1974). The essential problem with reliance on behavioral data is that evidence indicates that the same behavior can occur for a variety of reasons and can be accompanied by different subjective experiences. Thus, two individuals who have the same scores on a hypnotizability scale and display similar behavioral responses to hypnotic suggestions may have markedly different phenomenological experiences.

Although the majority of hypnotizability scales focus on behavioral responses, many early measures examined the depth of an individual’s hypnotic experience (North Carolina Scale, Tart, 1970; Brief Stanford Scale, Hilgard and Tart, 1966; Harvard Continuous Scale, Cheek, 1959; Orne and Evans, 1966; Field’s Inventory of Hypnotic Depth, Field, 1965). For example, in the North Carolina Scale (Tart, 1970), individuals rate their hypnotic depth following each suggestion on a scale from 0 (‘waking’) to 50+ (‘mind is sluggish’). Typically, there is strong concordance between behavioral and experiential measures, but experiential measures provide additional information that cannot be obtained through behavioral measures alone. A recent technique to index subjective experience, developed by McConkey and Barnier (see McConkey

et al., 1999) involved the use of a dial during hypnosis. The dial can be used to index any variable of interest to the researcher such as the strength of suggested experiences or the amount of effort required to achieve the suggested effects. Participants can adjust the dial continuously during any stage of the hypnotic suggestion, test and cancellation. The dial technique is a useful subjective measure as it provides information on alterations in subjective experience during hypnotic suggestions that cannot be determined by behavioral data alone (see also McConkey, Chapter 3, this volume).

Recognizing the importance of phenomenological features of hypnosis and the pivotal role of cognitive strategies in responding to hypnotic suggestions, Sheehan and McConkey (1982) developed the EAT. The EAT was motivated by an interactionist perspective of hypnosis, where the hypnotic subject is considered to be a dynamic individual who brings certain skills, abilities and expectancies into the hypnotic context. This perspective also acknowledges the social and contextual demands associated with hypnotic responding (see Sheehan *et al.*, 1978; Sheehan and McConkey, 1982; Kihlstrom and McConkey, 1990). In the EAT, the hypnosis session is videotaped and, afterwards, the participant and a second, independent experimenter watch the videotape. Whilst watching the videotape, the participant is invited to comment on their experience of particular suggestions. This strategy recognizes that an experimenter cannot question a participant about their responses during hypnosis without disrupting the hypnosis session. The cues afforded by a videotape of the hypnosis session remind participants about their responses and their associated subjective experiences (see also McConkey, Chapter 3, this volume).

The EAT is a useful technique for exploring participants' interpretation of suggestions, any strategies that they employed and their experience of the suggested effects. Additionally, the EAT provides information on affect, imagery, intensity and levels of control associated with hypnotic responding (Barnier and McConkey, 2004). Importantly, the EAT attempts to avoid leading questions that may cue participants towards certain responses. Instead, it explicitly allows the participant to make any comments

about their responses in an interview format that is intentionally open-ended. The success of the EAT requires good rapport between the participant and interviewer to avoid the participant feeling inhibited or directed when describing their experiences. Subsequently, participants' comments are independently assessed on a range of constructs driven by the experimental questions of the particular study.

One of the first studies using the EAT illustrates the different subjective experiences of a number of hypnotic participants whose behavioral responding was similar (Laurence and Perry, 1981). During hypnosis, participants received a suggestion for age regression and in the subsequent EAT they described their reactions to the suggestion. The following comments are from subjects who all passed the age regression suggestion. One participant said: 'I was there, you know. It was as if I was there but I wasn't very long. It came and went and it didn't stay it sort of felt like "what am I doing there?" and then the next thing I'm back there. I felt like that I was looking at myself in a sense something like you would do in a dream'. Another participant said: 'I had the feeling I was going with my mother ... I wasn't going to school yet so I felt five and a half on the verge of going for enrolment to school. I didn't have any sense of being an adult'. Another participant described the experience of being asked to write his name whilst age regressed: 'I was two people, one standing off looking at the other, and the other that was standing was saying, you idiot, you can write your name, why are you taking so long? Yet the one that's writing it is struggling away to form these letters'. The subtle differences in experience illustrated by these comments highlight the subjective differences that may accompany similar behavioral responses. Hence, use of the EAT allows researchers to gain a richer understanding of the complexities associated with hypnotic responding.

12.2.2.6. Converging methodologies

Good scientific inquiry should involve ruling out alternative explanations for observed effects, and the use of convergent, multimethod approaches has a long history in scientific psychology (Popper, 1959; Kuhn, 1962; Webb *et al.*, 1972). Hypnosis researchers have devised a

variety of techniques for investigating hypnotic phenomena that attempt to control for a range of confounding variables. These techniques have contributed towards our theoretical understanding of hypnosis and have provided the empirical foundations for hypnosis research. The research techniques described above were motivated by particular theories of hypnosis and were designed to address specific experimental concerns. As mentioned, attempting to control for all possible situational and experimental variables by using the general design proposed by Sutcliffe would be impractical. Rather, researchers should use convergent techniques to support inferences about hypnotic responding. Thus, hypnosis researchers are faced with the task of deciding which technique is most practical for addressing their hypotheses and which technique attempts to control for alternative explanations associated with competing theoretical approaches or potential confounds inherent in the research design that is used.

12.3. Current research

We now turn to review five areas of current research that illustrate a number of the core concepts described above and the choices available to researchers. These areas of current research vary in the extent to which hypnosis is used intrinsically or instrumentally, although frequently there is overlap in this regard.

12.3.1. Reality monitoring

Many commentators would argue that hypnosis is characterized by a belief in a suggested experience that is inconsistent with available information (Kihlstrom and Hoyt, 1988). Central to many theories of hypnosis is the proposition that hypnotized participants do not respond *as if* there is a different reality but that they actually believe in the external reality of the experience (Sheehan and McConkey, 1982; see also McConkey, Chapter 3; Barnier *et al.*, Chapter 6, this volume). Put differently, hypnotically suggested experiences are conceptualized as transient delusions in which the hypnotized individual reports a compelling belief in the reality of the experience (Sutcliffe, 1960, 1961).

Most hypnotic suggestions communicate to participants that the suggested experience possesses an external reality. For example, a suggestion for a visual hallucination would typically involve an instruction that an image is present, followed by a suggestion of the external reality of the object. The pivotal role of reality attributions of the suggested experience points to the importance of understanding hypnosis in the context of broader theories of reality monitoring (e.g. Johnson and Raye, 1981; Johnson *et al.*, 1984).

Evidence from nonhypnotic research suggests that experiences that involve perceptual and contextual detail are attributed to reality (Johnson *et al.*, 1993). However, there is reason to propose that during hypnosis different processes may mediate reality monitoring. Whereas some hypnotic participants can experience a vivid image and not attribute reality to it, others can believe in the external reality of a suggested experience without vivid imagery (Sheehan and McConkey, 1982). Further, although many hypnotic participants have equivalent abilities in imagery, belief in the reality of a suggested experience is reported primarily by those participants who have an ability to become absorbed in internal experiences (Sutcliffe *et al.*, 1970). This evidence indicates that belief in the reality of a suggested experience involves more than just vivid imagery. For example, following a suggestion for blindness, hypnotic participants maintain a compelling belief in their blindness despite reporting some degree of visual awareness (Bryant and McConkey, 1989*a,b*). Moreover, hypnotic participants maintain their belief in their reported blindness when they are confronted with reality information that demonstrates visual processing (Bryant and McConkey, 1989*b*). These responses highlight the anomalous nature of reality monitoring in hypnosis, and indicate that belief in the reality of a suggested experience is not directly related to perceptual or contextual detail.

Investigation of reality monitoring in hypnosis is an example of intrinsic research requiring a methodological approach that objectifies subjective experience during hypnosis. The obvious obstacle to understanding reality monitoring during hypnosis has been the possibility that demand characteristics may lead individuals to

report reality attributions because of salient expectations embedded in the hypnotic suggestion (Spanos, 1986). For example, a hypnotic suggestion to ‘not see’ an object leads to reported experiences different from those to a suggestion to ‘imagine not seeing’ an object (Barber and Calverley, 1964; Barber, 1969). The explicit expectation concerning the external reality of the suggested experience may result in perceived experimental demands to report reality attributions. This problem points to the need for more subtle means to index reality attributions made during hypnotic suggestions.

More than two decades ago, Orne and McConkey (1981) argued that comparing reported images of suggested events with subtly presented perceptual images provides an index of parameters of the believed-in reality of a suggested hypnotic experience. Their initial paradigm employed a black dot that changed color when it was electronically heated. By gradually modifying the color of the dot as hypnotic suggestions for hallucinations of the dot were administered, Orne and McConkey (1981) proposed that they objectively indexed internal experiences in a manner that was not contaminated by response biases. This approach built on a very early paradigm developed by Perky (1910), who asked participants to imagine an object on a screen while being presented with faint projected images of the object; these studies found that participants tended to confuse the projected stimuli with their own imagery. Previous research also attempted to manipulate participants’ perceptions of their capacity to respond to hypnotic suggestion by subtly presenting images that mimicked the suggested effects (Wickless and Kirsch, 1989; Benham *et al.*, 1998; Kirsch *et al.*, 1999) but these studies did not specifically index the reality attributions made during hypnosis.

More recent computer technology has allowed a more subtle and stringent application of this approach. In a series of studies, Bryant and colleagues indexed reality monitoring in hypnosis by utilizing computer-generated visual images to introduce into a hypnotic suggestion an externally generated projection without participants’ knowledge. By comparing participants’ responses during a hypnotic suggestion for a positive hallucination when an externally

based percept is absent and present, the paradigm allowed direct inferences to be made about the attributions of external reality that participants ascribe to hypnotic experiences. For example, in one study, highly hypnotizable participants were administered a suggestion to see a shape on a wall; after the suggestion had been administered, the suggested image was subtly projected on the wall (Bryant and Mallard, 2004). Participants reported comparable reality and vividness ratings when the projection was absent and present. In a related study, high and low hypnotizables were administered either a hypnotic induction or waking instructions, given a suggestion to hallucinate a shape, and a projected image was then introduced (Bryant and Mallard, 2003). Highs in the hypnosis, but not wake, condition made comparable reality ratings when the projected image was either absent or present. In another study, the real–simulating paradigm was employed, and findings indicated that real, but not simulating participants made comparable reality ratings when the projected image was absent and present (Bryant and Mallard, 2005). This highlights the value of the real–simulating paradigm for discerning behavioral differences between reals and simulators; reals hallucinated an image that they perceived to be as real as a projected image, whereas simulators did not.

Overall, the tendency to believe in the reality of the suggested event appears to be a distinctive feature of hypnosis, cannot be attributed to demand characteristics and depends on the capacity to develop belief in the suggested event. By subtly blending imagined and real images, these studies have demonstrated some of the important factors that underpin the reality attributed to hypnotic suggestions (for more, see McConkey, Chapter 3, this volume).

12.3.2. Functional blindness

An example of both intrinsic and instrumental research is a series of studies on visual conversion disorder and hypnotic blindness. Visual conversion disorder is diagnosed when either a loss or an alteration in visual functioning occurs in a way that suggests (but cannot be explained by) a physical disorder, appears to be influenced by psychological factors and is not under voluntary

control (American Psychiatric Association, 1994). Numerous early studies demonstrated that visual stimuli influence learning even though patients with visual conversion disorder deny the presence of those stimuli (Grosz and Zimmerman, 1965, 1970; Zimmerman and Grosz, 1966; Theodor and Mandelcorn, 1973). These studies employed discrimination tasks that involved visual stimuli which meant that above-chance performance required processing of visual information.

Bryant and McConkey (1989c) used the same visual discrimination task employed in previous studies (e.g. Grosz and Zimmerman, 1965, 1970) and evaluated the performance of a visual conversion disorder patient. Having demonstrated that visual processing occurred in the presence of reported phenomenal blindness, the same paradigm was used in a series of studies that induced blindness with a hypnotic suggestion (Bryant and McConkey, 1989a). Whereas real, hypnotized participants reported phenomenal blindness following a suggestion for hypnotic blindness, they responded on the task as if they were processing the available visual information. In a subsequent study, Bryant and McConkey (1989b) presented highly hypnotizable, hypnotically blind participants with unusual spellings of homophones (e.g. 'stake' instead of 'steak') and later required them to complete a word-spelling task that included the homophones. Consistent with other findings, highly hypnotizable, hypnotically blind participants demonstrated on the homophone-spelling task that they had processed the visual information that was presented during the hypnotic blindness.

Using a real-simulating design, Bryant and McConkey (1995) presented words to hypnotically blind participants and subsequently required them to complete a word-fragment task. Hypnotized participants correctly completed more word-fragments with words that had been presented previously during hypnotic blindness than with words that had not been presented. Simulating, un hypnotized participants performed similarly, however, in that they also performed at a superior level for words that were presented during the suggested blindness. Overall, this series of studies supported the proposal that although hypnotized participants report phenomenal blindness, they show implicit

perception by utilizing visual information on a range of visual tasks. Moreover, the finding that simulators behaved similarly to real hypnotized participants highlights the possibility that contextual factors may influence the responses of hypnotized participants. The potential role of contextual influences is important for understanding the responses of functional blindness because clinical studies of visual conversion disorder have highlighted that motivational manipulations can influence the behavior of hysterically blind patients (Sackeim *et al.*, 1979). The use of the real-simulating paradigm in hypnotically induced blindness allows for inferences about the role of social factors operating in both hypnotic and hysterical forms of functional blindness.

The use of the EAT in this research program also highlighted the role of active cognitive strategizing to experience functional blindness. Through application of the EAT, Bryant and McConkey (1989b, 1990) found that participants were able to maintain a strong belief in their suggested blindness even when they perceived some visual percepts. That is, when participants reported becoming aware of some percepts during the suggested blindness, they imposed cognitive frameworks on these reality features of their environment that allowed them to meet the request of the hypnotist to experience blindness. For example, one participant reported that when she was aware of partial visual percepts she 'did not register them' because she believed 'it was not important to notice them'. This response is consistent with the notion that hypnotized individuals respond in a problem-solving way to the demands of the hypnotic setting (Sheehan and McConkey, 1982; see also Barnier *et al.*, Chapter 6, this volume). In this sense, Bryant and McConkey (1989b) demonstrated that the experience of hypnotic blindness was associated with the use of constructive cognitions that allowed participants to resolve strategically the conflict between reality information and suggested blindness. For instance, some participants reported intentionally imagining opaque objects in their visual field so as to facilitate a belief in their blindness. Others reported imagining that they were wearing special glasses that prevented sight. This pattern of active problem-solving was supported by

the finding that hypnotized participants are more likely to experience suggested blindness if they are explicitly instructed to use a constructive cognitive style (Bryant and McConkey, 1990).

This convergent work between the clinic and the laboratory allowed development of a model of functional blindness that conceptualized both phenomena as a dissociation between episodic and semantic representations of visually processed events (Bryant and McConkey, 1999). This view proposed that during functional blindness, the links between semantic and episodic representations of visual percepts are altered in a way that allows a phenomenal experience of blindness. Nevertheless, because semantic representations are activated in the absence of awareness, some implicit perception occurs during phenomenal blindness. Overall, this use of hypnosis to investigate functional blindness led to a model that allowed an explanation of both cognitive and social factors that contribute to functional blindness, and one that could be considered in the context of prevailing models of hypnosis, dissociation and conversion disorder (Kihlstrom, 1984, 1994; see also Chapter 2, this volume).

12.3.3. Post-hypnotic amnesia

Post-hypnotic amnesia is another example of a hypnotic phenomenon that is of both intrinsic and instrumental value. Post-hypnotic amnesia is a particularly useful technique for investigating memory and amnesia (Kihlstrom and Evans, 1979). Post-hypnotic amnesia shares a number of features with functional amnesia, which is defined as memory loss ‘attributable to an instigating event or process that does not result in damage or injury to the brain, and produces more forgetting than would normally occur in the absence of an instigating event or process’ (Schacter and Kihlstrom, 1989, p. 209). This type of memory loss is seen in a number of clinical disorders, such as dissociative fugue, dissociative amnesia and dissociative identity disorder. Post-hypnotic amnesia can produce similar memory loss, and involves suggesting to a hypnotized individual that after hypnosis they will be unable to remember certain things, typically the events of hypnosis. Post-hypnotic amnesia shares three features with functional amnesia: (1) impaired explicit memory; (2) a

dissociation between explicit and implicit memory; and (3) reversibility (Kihlstrom and Schacter, 1995; Barnier *et al.*, 2001, 2004; Barnier, 2002).

To illustrate these three features of post-hypnotic amnesia, Barnier (2002) asked high and low hypnotizables to recall a memory from their first day of high school and their first day of university. Following a hypnotic induction and a number of standard hypnotic suggestions, she gave half the participants a post-hypnotic amnesia suggestion for their first day of high school and the other half a post-hypnotic amnesia suggestion for their first day of university. Following hypnosis, she gave participants two tasks—category generation and social judgement—designed to index their implicit memory for the autobiographical events. She then asked participants to (explicitly) recall the autobiographical events. Next, she administered a reversibility cue to cancel the post-hypnotic amnesia and asked participants to recall the events again. Findings demonstrated impaired recall (explicit memory) for highs but not lows of memories targeted by the post-hypnotic amnesia suggestion, equivalent performance between highs and lows on the category generation and social judgement (implicit memory) tasks, and reversibility of the recall impairment. Thus, in this study hypnosis provided a useful framework for investigating the features of, and potential processes influencing, disordered autobiographical memory.

One question is whether the processes underlying post-hypnotic amnesia are the same as the processes underlying normal forgetting outside the hypnotic context. One paradigm that can be compared with post-hypnotic amnesia is the directed forgetting paradigm, which assesses forgetting in a nonhypnotic context. Directed forgetting has been defined as a motivated attempt to limit the future expression of specific information (Johnson, 1994). If a comparison of post-hypnotic amnesia and directed forgetting produces similar patterns of memory loss, it implies that similar mechanisms underlie both types of forgetting. However, if different patterns of memory loss are displayed, it suggests that the forgetting associated with post-hypnotic amnesia is a unique phenomenon of hypnosis.

Research comparing post-hypnotic amnesia and directed forgetting has produced conflicting findings. Some researchers have claimed that the process of retrieval inhibition operates during both post-hypnotic amnesia and directed forgetting (Geiselman *et al.*, 1983; Anderson and Bjork, 1994). Others have argued that it is not retrieval inhibition but rather output inhibition that operates during post-hypnotic amnesia (Huesmann *et al.*, 1987). And others have claimed that post-hypnotic amnesia is the result of strategic techniques such as distraction or the voluntary withholding of information (Wagstaff, 1981, 1986, 1991; Spanos, 1986, 1991). A number of studies have attempted to compare post-hypnotic amnesia and directed forgetting using different experimental techniques (e.g. Geiselman *et al.*, 1983), but this has made it difficult to draw conclusions about their relatedness. However, the few studies that have compared directed forgetting and post-hypnotic amnesia in the same experimental paradigm suggest that different processes may underlie each.

In one of these studies, Coe *et al.* (1989, experiment one) hypnotized high and low hypnotizables and presented them with a study word list (to be forgotten list—TBF). Using suggestion variations, half of the participants then received a post-hypnotic amnesia suggestion and half received directed forgetting instructions. Participants were then presented with a second word list which they were asked to learn (to be remembered list—TBR). Following hypnosis, participants were asked to recall as many words as possible from both lists. A cancellation cue was then administered and participants were again asked to recall as many words as possible from both lists. Coe *et al.* (1989) found that highly hypnotizable participants had better recall for the TBR list following post-hypnotic amnesia, but not in response to directed forgetting instructions. Low hypnotizables had better recall for the TBR list following directed forgetting instructions but not in response to post-hypnotic amnesia instructions. The authors noted that a number of highly hypnotizable participants appeared confused by receiving directed forgetting instructions during hypnosis. Therefore, in their second experiment, Coe *et al.* (1989) gave high and low

hypnotizables directed forgetting instructions outside of hypnosis. The results indicated that both high and low hypnotizables performed similarly, suggesting that the hypnotic context interacts with hypnotizability to produce differences in forgetting. Coe *et al.* (1989) concluded that participants given directed forgetting instructions displayed different patterns of memory loss compared with participants who received post-hypnotic amnesia instructions.

In another study comparing post-hypnotic amnesia and directed forgetting using the same paradigm, David *et al.* (2000) gave high and low hypnotizables a study word list (TBF) followed by either post-hypnotic amnesia or directed forgetting instructions. They were subsequently presented with a second word list (TBR) which they were asked to learn. Participants then received either an intentional or incidental memory test. In the intentional memory test, participants were presented with word stems which they were asked to complete with a word from the TBF list. If they could do this they were also asked to provide an additional word stem completion. If they were unable to complete the word stem with a word from the TBF list, they were asked to complete it with the first word that came to mind. In the incidental memory test, participants were asked to complete the word stem with the first word that came to mind. If that word happened to be from the TBF list they were asked to provide an additional word stem completion. David *et al.* (2000) also included a control condition in which participants received one list of words that they were asked to learn, followed by an intentional or incidental memory test. Initial analyses indicated that highs and lows displayed similar patterns of memory loss across post-hypnotic amnesia and directed forgetting instructions. However, when the variance that was responsible for forgetting in the control condition was removed, there was no significant relationship between post-hypnotic amnesia and directed forgetting. This again suggests that different mechanisms underlie these two types of memory loss. These converging findings across multiple procedures suggest that post-hypnotic amnesia is the result of an interaction between hypnosis and hypnotizability and is therefore a uniquely hypnotic phenomenon (but see Barnier, 2004).

One of the key features of post-hypnotic amnesia is its ability to produce alterations in the accessibility of autobiographical memories. In other words, although certain autobiographical memories may be available to consciousness, they may not necessarily be as accessible as other memories (Tulving and Pearlstone, 1966). The shifting accessibility of autobiographical memories is displayed in a number of clinical conditions such as dissociative fugue (Schacter, 1996) and post-traumatic stress disorder where intrusive memories of a trauma are often suppressed (Brewin, 1998, 2001). An experiment by Cox and Barnier (2003) demonstrates the shifting accessibility of autobiographical memories following a suggestion for post-hypnotic amnesia. During hypnosis, high and low hypnotizables elicited specific events that had occurred during their first romantic relationship in response to 10 cue phrases. The authors used two different versions of the suggestion to administer a post-hypnotic amnesia suggestion for either the entire first romantic relationship or for only the specific events from participants' first romantic relationship that they had previously described to the experimenter (as noted above in our discussion of suggestion differences). Following hypnosis, their memory was tested on a cued recall task consisting of five cue phrases that had been presented at elicitation (old cues) and five cue phrases that had not previously been presented (new cues). The results indicated that highly hypnotizable participants who had received the post-hypnotic amnesia suggestion for the entire romantic relationship had difficulty recalling the specific memories they had originally elicited (as indexed by their responses to old cues). In this situation, post-hypnotic amnesia appeared to inhibit selectively the retrieval of particular, unwanted, autobiographical memories. These findings indicate that post-hypnotic amnesia is a useful technique for exploring shifts in memory accessibility, allowing comparisons with clinical disorders of memory.

12.3.4. Suppression of unwanted thoughts and emotions

A common phenomenon in many psychological disorders is the presence of intrusive and

unwanted emotional states, thoughts and memories. Although much research has addressed these issues, experimental attempts to inhibit unwanted psychological states have only been partially successful (Gross, 1999). Multiple systems theories of emotion propose that inhibition of emotion can differentially influence distinct emotional systems, including physiological, expressive and semantic representations of emotional experience and expression (Schacter, 1990). For example, Kihlstrom and colleagues proposed that the conscious experience of emotion can be dissociated from the semantic representations of the emotional material (Kihlstrom *et al.*, 1999). This view may suggest that emotional inhibition can limit conscious experience of the emotional state but not influence how people remember personal and emotional experiences. Hypnosis may be a useful instrumental technique for studying emotional inhibition because hypnosis can limit awareness of sensory and cognitive experiences, including vision (Bryant and McConkey, 1989a), pain (Wilson, 1989) and memory (Kihlstrom, 1984; Barnier, 2002). Moreover, case studies indicate that post-hypnotic suggestion for specific emotional states modifies facial emotional reactivity (Weiss *et al.*, 1987), and experimental studies demonstrate that hypnotically induced emotions result in specific physical reactions (Bryant and McConkey, 1989d).

In a series of experiments, Bryant and colleagues used a hypnotic suggestion to determine some fundamental features of emotional numbing. In a pilot study, Bryant and Kourch (2001) reported that in response to a hypnotic suggestion for emotional numbing, high, but not low, hypnotizables displayed minimal emotional responsiveness to aversive visual stimuli. In a subsequent study that employed the real-simulating design, Bryant and Mallard (2002) demonstrated that a hypnotic suggestion for emotional numbing resulted in no change in corrugator muscle activity in response to aversive stimuli among reals; importantly, this pattern was not observed in simulators. This finding suggests that diminished emotional responding in hypnotic emotional numbing cannot be attributed simply to the effects of demand characteristics. Bryant (2005a) also found that presenting aversive stimuli at a subliminal

level during hypnotically suggested emotional numbing indicated that hypnosis influenced emotional responding at a pre-conscious level. In a study of the influence of emotional numbing on recall of emotional memories, Bryant and Fearn (2007) administered highly hypnotizable participants a hypnotic induction and then asked half of the participants to suppress emotional responses to a personal emotional memory. Whereas highly hypnotizable participants who suppressed emotional memories during hypnosis displayed less emotional self-reported responsivity and electromyographic (EMG) corrugator muscle activity, this numbing did not influence their recall of the memories. In other words, the hypnotically created emotional inhibition differentially influenced affective and semantic components of the emotional response. Finally, Bryant and Kapur (2006) administered high and low hypnotizables either a hypnotic or a control wake induction, and then administered either a suggestion for emotional numbing or a control instruction. Interestingly, highly hypnotizable participants displayed effective emotional numbing regardless of whether they received hypnosis or wake suggestions. Taken together, these findings demonstrate how hypnosis can be used in a programmatic manner to test under experimental conditions a psychological phenomenon that can be difficult to control in clinical contexts.

This approach has also been used to test current theories of control of unwanted thoughts. In a seminal study on thought suppression, Wegner *et al.* (1987) instructed participants either to suppress or express thoughts of a white bear, and found that suppression resulted in increased awareness of white bear thoughts. Subsequent studies have found that attempted suppression leads to accessibility of the suppressed thoughts either during the period of suppression or after the suppression has been terminated (for a review, see Wenzlaff and Wegner, 2000). Ironic control theory proposes that mental control involves the interplay of two processes, an intentional operating process and an ironic monitoring process (Wegner, 1994; Wenzlaff and Wegner, 2000). During mental control, an operating process attempts to maintain the desired state of mind by searching consciously and effortfully for items consistent

with the preferred state (intentional operating process). In parallel, a monitoring process searches the mind for indications of the failure of mental control (ironic monitoring process). During attempted mental control, the ironic monitoring process is less effortful and less likely to be disturbed by the allocation of attention to concurrent tasks (Wegner, 1994). The theory holds that because the intentional operating process is an effortful and conscious process, the search for alternative thoughts is susceptible to being disrupted by other demands on cognitive resources. In contrast, the ironic monitoring process requires fewer cognitive resources, and will continue in its vigilance for unwanted thoughts. Accordingly, when mental capacity is diminished by additional cognitive load, the intentional operating process becomes disrupted while the ironic monitoring process continues its search for mental contents that signal failure of mental control. Ironic control theory holds that the primary reason attempted suppression is unsuccessful is because under conditions of cognitive load or cessation of suppression, the ironic monitoring process searches for and elicits awareness of the unwanted thoughts.

Hypnosis may be a useful means of investigating ironic control theory because of its proposed capacity to allow completion of cognitive tasks with relatively fewer cognitive resources. Bowers's (1984; see also Woody and Bowers, 1994; Woody and Sadler, Chapter 4, this volume) dissociated-control theory proposes that hypnosis permits more effective management of cognitive load because it involves dissociation of cognitive subsystems that can initiate and maintain tasks with minimal interference of other subsystems. Consistent with this hypothesis, there is evidence that hypnosis permits completion of cognitive tasks with less effort than when hypnosis is not involved (Crawford and Gruzelier, 1992; Miller and Bowers, 1993; see also Woody and Sadler, Chapter 4, this volume). Further, individuals with high levels of hypnotizability are characterized by greater attentional capacity (Graham and Evans, 1977; Bowers and Breneman, 1981), which may also facilitate performance on cognitive tasks. In order for thought suppression to occur effectively, cognitive demands must be managed. The tendency

for hypnosis to produce more effective management of cognitive demands, combined with the attentional capacity of highly hypnotizable individuals, suggests that hypnosis may contribute to more effective thought suppression.

Using a hypnotic suggestion for suppression of unwanted thoughts, Bryant and colleagues have demonstrated that hypnosis does allow for more effective thought suppression. In an initial study, Bryant and Wimalaweera (2006) asked high and low hypnotizables either to suppress or to not suppress a memory of an embarrassing experience, and subsequently asked them to complete a sentence unscrambling task that indexed accessibility of embarrassing thoughts. Whereas lows instructed to suppress displayed a delayed increase in suppressed thoughts (consistent with much nonhypnotic evidence on thought suppression), highs did not. In a subsequent study, Bryant and Sindich (2007) administered high and low hypnotizables a hypnotic induction and then either a suggestion for thought suppression or a control instruction while under cognitive load achieved by simultaneously recalling a six-digit number. Hypnotized participants did not display rebound (the return of suppressed thoughts when no longer suppressing) even when administered cognitive load. In further studies, Bryant and colleagues found that more effective suppression occurred for highly hypnotizable participants in hypnotic, but not in nonhypnotic, contexts, and that whereas increased cognitive load diminished effective suppression in lows, load did not adversely affect highs (Bryant, 2005*b*). These convergent data usefully extend ironic control theory by demonstrating that the paradoxical effects of attempted suppression are not observed in hypnosis, and it appears that this difference can be attributed to hypnotized participants' superior ability to manage cognitive load.

12.3.5. Delusions

Recently, a number of studies have used hypnosis instrumentally as a laboratory analog of identity delusions. One of the key similarities between hypnotic phenomena and delusions is that both are essentially characterized by distortions of reality or distorted beliefs about reality. Deluded individuals maintain deluded beliefs

that have no basis in reality and, similarly, during hypnosis, hypnotic participants are transiently deluded about the real state of the world (Sutcliffe, 1960, 1961). Another similarity between delusions and hypnosis is that both involve alterations in cognitive processing. According to Kihlstrom and Hoyt (1988), hypnotic phenomena represent disorders of metacognition. During hypnosis, participants are unaware of their own cognitive processes and the resulting influence of these processes on their behavior. Thus, their behavior is influenced by beliefs about themselves and the world that are false but are nevertheless maintained with conviction. Likewise, deluded individuals maintain false beliefs with conviction, and lack insight into the cognitive processes that give rise to these beliefs (even if they often have insight that their beliefs are abnormal; Davies *et al.*, 2002).

One technique that has been used to investigate identity delusions involved a hypnotic suggestion for a sex change. Asking an individual to believe that they are the opposite sex requires a change in one's fundamental beliefs, and has been shown to be an experience that very highly hypnotizable participants can achieve (Sutcliffe, 1961). Using the real-simulating paradigm, Noble and McConkey (1995) administered a hypnotic sex change suggestion to real, high hypnotizables and simulating, low hypnotizables. During the suggested sex change, a hypothetical authority figure challenged participants' belief that they were their suggested identity. Participants' beliefs were also challenged by asking them to look at themselves on a monitor and describe what they were experiencing. Thus, participants were confronted with conflicting visual information of their actual identity. Noble and McConkey (1995) found that hypnotic virtuosos changed their name during the delusion to a name consistent with their suggested identity, described themselves differently and made strong reality ratings of their experience. Importantly, virtuosos defended their belief in their suggested identity when challenged, whereas simulators did not (see also McConkey, Chapter 3, this volume).

As part of her doctoral research, Cox (2007) examined autobiographical memory during a hypnotic identity delusion, using the

real-simulating paradigm. Following a hypnotic induction, real, high hypnotizables and simulating, low hypnotizables received a delusion suggestion to become a friend's sibling. During the suggested delusion they were asked to complete five sentences, each beginning with the words 'I am'. They were then asked to elicit autobiographical memories that illustrated two of the sentences they had used to describe themselves. In addition to challenging identity with the same techniques used by Noble and McConkey (1995), participants' autobiographical recall was challenged by asking them how they knew that the memories they described were events they had actually experienced. Cox found that the autobiographical memories provided by reals were specific events, rich in sensory-perceptual detail, whereas the autobiographical memories provided by simulators were general events, lacking sensory-perceptual detail. Additionally, reals chose to reinterpret previously experienced events and never confabulated. In contrast, simulators sometimes reinterpreted previous experiences but mostly confabulated. Notably, reals maintained their deluded identity when challenged and provided justification during the suggested delusion that they had experienced their autobiographical memories, whereas simulators did not. This suggests that reals were not simply responding to the demand characteristics associated with the hypnotic setting. Rather, they were experiencing a compelling delusion that appeared to facilitate the retrieval of specific autobiographical events, re-interpreted from the perspective of their suggested identity.

In addition to modeling the features of clinical delusions, hypnosis can also be used to investigate possible underlying mechanisms and processes. For example, Burn *et al.* (2001) investigated selective information processing during a hypnotic identity delusion. Reals and simulators received a hypnotic suggestion for sex change and were presented with a story about a male and female character. After encoding the story, participants were asked to indicate the character they mostly identified with. Following hypnosis, they were asked to recall the story as completely and accurately as possible. Burn *et al.* (2001) found that very highly hypnotizable individuals were less likely than simulators to

identify with the character consistent with their hypnotically suggested sex. However, very highly hypnotizable individuals recalled more information from the story about the character consistent with their suggested sex than simulators (see also McConkey, Chapter 3, this volume).

In a similar study, Cox (2007) gave high and low hypnotizables a suggestion to become a friend or relative who was the opposite of them in terms of dominant and submissive personality traits. Either before or during the suggested delusion, participants listened to a story about a dominant and submissive character. Participants who encoded the story before the delusion were asked to recall the story during the delusion and participants who encoded the story during the delusion were asked to recall the story after the delusion had been canceled. Cox found that there were no differences between highs and lows in the character they mostly identified with. However, highs who encoded the story during the delusion recalled more information about the character consistent with their suggested identity than about the character inconsistent with their suggested identity.

Together, these findings suggest that memory is both selective and goal directed. During an identity delusion, highly hypnotizable individuals selectively encode information that is consistent with their deluded identity. These results also imply that when new memories are formed during a delusion, the memories that are consistent with the deluded identity may be more likely to be recalled at a later point. Thus, hypnosis provides researchers with a powerful instrumental technique for modeling both the features and underlying processes that may operate during an identity delusion.

12.4. New techniques and future directions

Hypnosis researchers have developed a multitude of techniques to address their research questions. The scope of hypnosis research also continues to broaden to encompass new technological developments and theoretical influences from areas outside the domain of hypnosis. One important way for hypnosis research to progress is by utilizing technological

advances that were not available in previous years. This has allowed researchers to revisit theoretical positions postulated many years ago and to test them under experimental conditions that have only recently become available. Additionally, one challenge for future hypnosis research is to link laboratory findings with external theories from nonhypnotic domains. We will now discuss developments in neuroimaging that have allowed important questions about the nature of hypnosis to be tested in ways previously not possible. We will also examine the value of linking hypnosis research with external theories by providing an example of convergence between hypnosis, autobiographical memory and delusions. Together, these have been integrated to develop a new theoretical model of deluded autobiographical remembering.

12.4.1. Neuroimaging

One major advance in recent times has been the techniques available to study neural networks associated with hypnotic suggestions. The intriguing theoretical questions addressed by brain imaging techniques include: (1) is hypnosis associated with a specific neurophysiological state; and (2) is neural activity during hypnotically suggested states the same as during actual experiences of those states. For example, does the brain respond similarly if a person is seeing an object, imagining the object or experiencing a hypnotic suggestion of a visual hallucination of the object? These questions speak to the ‘reality’ of the hypnotic response because brain imaging techniques can elucidate if hypnosis is eliciting a response that is distinctive from what we can observe in nonhypnotic conditions.

Some studies have investigated the influence of a suggested negative visual hallucination on event-related potentials (ERPs) during the presentation of visual stimuli (Perlini *et al.*, 1996). ERPs are useful to study because they reflect neural activity in response to sensory stimuli and they can provide an index of the influence of hypnotic blindness on cortical responses to visual information. Although some earlier case studies indicated altered ERP activity during hypnotic blindness (e.g. Clynes *et al.* 1964), others did not (Beck and Barolin, 1965;

Serafinides, 1968). Later studies used larger sample sizes and employed statistical, rather than visual, analyses of ERP data (Spiegel *et al.*, 1985; Perlini *et al.*, 1993). Spiegel *et al.* (1985), for example, administered a suggestion for a hallucinated opaque box in front of the visual stimuli, and observed diminished amplitude of ERPs (P300) in highly hypnotizable participants only. Perlini *et al.* (1993) partially replicated Spiegel *et al.*'s (1985) study and also observed decreased P300 amplitude. Whereas Spiegel *et al.* (1985) argued that their findings indicated that hypnotic participants focused attention on the hallucinated image rather than on the visual stimulus, Perlini *et al.* (1993) considered that their similar finding was an indication that participants simply shifted their attention away from the stimulus to meet the demands of the experimental setting. Both of these interpretations point to cortical processes that are involved in hypnotic blindness, and suggest that these processes involve alterations in the allocation of attention. Evidence also indicates that suggested imagery is associated with particular neurophysiological patterns, indexed by positron emission tomography (PET; Szechtman *et al.*, 1998; Rainville *et al.*, 1999), ERPs (Spiegel *et al.*, 1989; Jasiukaitis *et al.*, 1996; Barabasz, 2000) and electroencephalography (EEG; De Pascalis and Penna, 1990) paradigms (for more detail, see Spiegel, Chapter 7; Barabasz and Barabasz, Chapter 13; Oakley, Chapter 14, this volume).

In recent years there has been increasing evidence that neurophysiological responses during hypnosis or imagery are comparable with responses to actual stimuli. For example, there is evidence that when given specific suggestions, hypnosis or imagery participants respond similarly to imagined and actual stimuli with PET (Kosslyn *et al.*, 2000). In contrast, there is evidence that processing of suggested and perceived stimuli involves distinct neural systems (Kosslyn and Thompson, 2000). These recent advances in neuroimaging, and especially those technologies that permit time-locked assessment of neural activity, allow long-standing theories to be tested in the context of current theories of neuroscience (see Oakley, Chapter 14, this volume).

However, when using neuroimaging techniques, researchers should remember that simply correlating hypnotic responding with activation in various areas of the brain is limited in terms of its explanatory capacity. Given the complexity of hypnotic responding, hypnosis researchers should consider whether neuroscience techniques are the most suitable techniques for addressing their research questions. Kirsch and Lynn (1995) outlined a number of questions that may benefit from neuroscience techniques including: (1) whether hypnosis is a unique state; (2) the role of cognitive strategies in hypnotic involuntariness and responding; (3) whether hypnosis alters information processing; and (4) the physiological substrates of hypnosis. However, hypnosis researchers must ensure that neuroscience techniques are not the only techniques used in future hypnosis research. Given that hypnosis is essentially a private experience, neuroimaging techniques may not necessarily index differences in private experiences. For instance, although two individuals may display similar neurological activity in response to a hypnotic suggestion, the reality, belief, effort and volition associated with their responses may differ. Neuroimaging techniques may not capture these differences and are also unlikely to detect differences in the type of strategy that may have been employed. As Barnier and McConkey (2003) noted, there are a number of broad research questions that neuroscience techniques are unlikely to help answer, such as: (1) what makes hypnotizability so stable; (2) how best to understand the subjective experience of hypnosis; (3) whether the structure of hypnotic instructions influences hypnotic responding; and (4) the extent to which hypnotic behavior is influenced by intentional compliance. Thus, hypnosis researchers should carefully consider whether neuroscience techniques will be the most effective means of addressing their research questions (see also Barnier and McConkey, 2003).

12.4.2. Integrating hypnosis research with other domains

One challenge facing hypnosis researchers in the future involves the integration of hypnosis research with external theories from domains

outside of hypnosis. The instrumental value of hypnosis affords researchers the opportunity to examine empirically the features and mechanisms associated with a variety of clinical, cognitive and social psychological phenomena. To illustrate the integration of hypnosis research with other domains, converging methodological techniques and theories from hypnosis, delusions and autobiographical memory have led to the proposal of a new model of deluded autobiographical memory (Cox, 2007). Given the difficulty of studying identity delusions in isolation from other pathological symptoms, hypnosis provides an ideal technique for creating transient identity delusions in the laboratory. As mentioned, this is mainly because hypnotic delusions share a number of features with clinical identity delusions (see also Langdon and Coltheart, 2000).

A prominent feature of identity delusions is the resulting disruption that occurs to autobiographical memory. The case of E.N. (Baddeley *et al.*, 1996) illustrates the impact of an identity delusion on autobiographical memory. E.N. believed she had connections to the British royal family and a nonexistent twin sister who had the same first name as her. E.N. described this sister saying:

She was born in Ipswich Hospital in Suffolk. I haven't seen her for 10 years. I only saw her for a week. I was sunbathing in the garden and a car pulled up and she walked in the gate with her suitcase. She only stayed a week. And when she was 18 she started to smoke cannabis and she was living with a hippie in Burwell.

E.N.'s belief that she had a twin sister appeared to influence the autobiographical memories that she accessed. Likewise, the autobiographical memories that E.N. recalled were consistent with her belief about the existence of a twin sister. This suggests that her deluded autobiographical memory supported her delusional belief of having a twin, thus illustrating the fundamental intertwining of identity with autobiographical memory.

There has been a lack of systematic, empirical investigation of autobiographical memory during an identity delusion. Current theories of delusions are suggestive but limited in their ability to explain deluded autobiographical

memory (e.g. Maher, 1974, 1988, 1992; Kihlstrom and Hoyt, 1988; Bental *et al.*, 1991; Stone and Young, 1997; Garey and Freeman, 1999; Langdon and Coltheart, 2000). However, a prominent model of autobiographical memory proposed by Conway and colleagues (Conway and Pleydell-Pearce, 2000; Conway *et al.*, 2004; Conway, 2005), which involves a reciprocal relationship between the self and memory, may assist in explaining autobiographical remembering during an identity delusion. According to Conway's Self-Memory System model, current self and the goals of the self influence the type of autobiographical memories that are retrieved at any given time. Central to the model is a distinction between *memory coherence* and *memory correspondence*. Correspondence refers to the need to record experiences as accurately and efficiently as possible, whereas coherence refers to the need to maintain a coherent system where goals, beliefs and self-images are consistent with autobiographical memories. The working self initiates control processes that facilitate access to autobiographical memories that are consistent with current goals, and also inhibit access to memories that may disrupt the coherence of the self-memory system. This suggests that when there is a change in self (e.g. during an identity delusion) there will be a subsequent change in autobiographical memory.

Cox (2007) established a hypnotic paradigm to investigate autobiographical memory during a hypnotic identity delusion. Participants were administered a variety of hypnotic suggestions to become individuals who were real and non-existent, similar and dissimilar, and familiar and unfamiliar. For example, they were asked to become a (real) sibling or to believe that they had an extra (nonexistent) sibling. They were also asked to become a same-sex sibling (familiar) or a friend's sibling (unfamiliar), and a similar or dissimilar friend or relative. During these suggested delusions, the hypnotist asked participants to report autobiographical memories. Findings indicated that highly hypnotizable participants consistently changed their name and described themselves differently in response to a suggested identity delusion. Findings also indicated that a hypnotic identity delusion influenced autobiographical memory in a number of ways. The identity delusion led to the

elicitation of specific autobiographical memories that were consistent with the suggested identity. These memories were re-interpretations of previous experiences and were viewed from the perspective of the suggested identity. Additionally, retrieval of autobiographical memories that were consistent with the suggested identity was facilitated, and retrieval of autobiographical memories that were inconsistent with the suggested identity was inhibited.

Based on these findings, Cox (2007) proposed a model of autobiographical memory during an identity delusion that integrated Conway's (2005) Self-Memory System with aspects of Langdon and Coltheart's (2000) two-factor theory of delusions. According to Langdon and Coltheart (2000), there are two factors that contribute towards the development of delusional beliefs. The first factor involves a neuropsychological (or psychological) anomaly affecting perceptual and/or emotional processing, which is responsible for the content of delusions. The second factor converts the neuropsychological anomaly into a delusional belief. This second factor results in a failure to reject delusional beliefs and can be conceived in terms of damage to a 'safety mechanism'. In normal circumstances, the safety mechanism suspends immediate sensory evidence in order to evaluate other types of evidence such as inferences about other people's actions, and our knowledge of the world acquired through past experiences. However, damage to this safety mechanism may result in the inability to access evidence that would refute a delusional belief.

Cox's (2007) model proposes that during an identity delusion, particular circumstances such as a hypnotic suggestion or a neuropsychological impairment, alter the working self, producing a deluded working self. A reality-monitoring failure, similar to the alteration in reality monitoring that occurs during hypnosis (Sheehan and McConkey, 1982; Bryant and McConkey, 1989*b*) results in memory coherence being prioritized over memory correspondence. Autobiographical memories are drawn from the knowledge base but are re-interpreted in order to be coherent with the deluded identity. These memories are associated with recollective experience, which provides deluded individuals with compelling evidence that they were

self-experienced and also serves to reinforce the deluded working self. Thus, this research has demonstrated how a hypnotic paradigm can be used to integrate neuropsychological and delusion research with autobiographical memory research. Integrating these distinct areas has provided a theoretical and empirical framework for future research on hypnosis, delusions and autobiographical memory. Considering the success of hypnosis at modeling various clinical phenomena, it is likely that hypnosis can establish linkages with research in a multitude of other domains.

12.5. Concluding comment

Finally, we wish to make a separate, but important, point about the nature and influence of hypnosis research. Despite major advances in hypnosis research in recent years, there has been a curious decline in the prominence of hypnosis research in major research journals. Although many outstanding hypnosis studies appear in specialist journals, this research does not appear to be having a sufficiently strong impact in the broader domains of psychology, psychiatry and neuroscience. The future of hypnosis research will depend, in part, on the capacity of hypnosis researchers to integrate hypnosis research into the knowledge bases of research in these broader areas, a point made by Hilgard (1974) many years ago. This goal can be achieved by capitalizing on the potential of hypnosis to extend major issues in cognitive and social psychology, the neuroscience of consciousness, and applications in clinical psychology and psychiatry. By employing recent technological advances in these fields, and by using the strength of hypnosis research, there is an opportunity both to deepen our understanding of hypnosis and to investigate a broad array of psychological states in ways not afforded by other approaches.

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CHAPTER 13

Hypnosis and the brain

Arreed F. Barabasz and Marianne Barabasz

13.1. Introduction

In the previous edition of this volume (Fromm and Nash, 1992), Crawford and Gruzelier (1992, p. 227) claimed that we had entered the ‘decade of the brain’, a period with new sophisticated neurophysiological techniques and technologies. The years following that observation produced mountains of converging data clarifying the ground-breaking research of the 1980s. As a result, our understanding of the neurological foundations of the hypnotic state has been greatly extended. And the sophistication in brain response measurement has moved well beyond what most researchers in the field in 1992 ever imagined might someday be possible.

A third of a century ago, the pre-eminent psychologist in the field, Ernest R. Hilgard, thought that physiological markers of the hypnotic state were ‘unlikely to be found’, although he believed there was the ‘possibility that subtle indicators will eventually be found’ (Hilgard, 1973, p. 978). Now, numerous experimentally controlled investigations have produced consistent and converging findings demonstrating physiological responses associated with hypnotic conditions only and showing that role-playing and suggestion-expectancy without hypnosis are insufficient to produce these unique responses. Only participants who demonstrate their ability to respond to hypnosis are able to produce subtle yet robust physiological markers of the state. More important still, these markers directly reflect the alterations in consciousness that correspond to

participants’ subjective experiences of perceptual alteration (Barabasz and Watkins, 2005, p. 86). Given the overwhelming neurophysiological data now extant, Killeen and Nash (2003) concluded that we should now view the ‘hypnotic situation’ as the ‘hypnotic state (HS) in which the subject’s responses are characteristic, and different than without this state’ (p. 223).

Perhaps the culmination of the decade of the brain was the September 2002 University of Tennessee Conference on Brain Imaging and Hypnosis. All of the invitees had recently published influential brain-hypnosis articles in highly visible publications outside of the journals devoted solely to research and practice in hypnosis. These publications were from *The American Journal of Psychiatry, Science, Lancet, Proceedings of the National Academy of Sciences, USA* and *Scientific American*. The April and July 2003 issues of the *International Journal of Clinical and Experimental Hypnosis* were entirely devoted to the proceedings of the conference.

In this chapter, we aim to present current experimentally controlled research findings in language understandable to hypnosis researchers and clinicians whose expertise lies outside neurophysiology. In particular, we summarize the articles presented in the April and July 2003 special issues of the *International Journal of Clinical and Experimental Hypnosis*, as well as additional significant studies that have appeared in the literature since then. In addition, we highlight research design issues that threaten progress in the field. To best understand the data from this

critically important work, in this chapter we first clarify some common misunderstandings that have plagued the study of hypnosis and the brain and describe modern brain imaging techniques.

13.2. Core concepts and foundation research

A quarter of a century ago, Nick Spanos (1982) coined the term ‘special process’ as a label for Hilgard’s (1977) neodissociation (trance-state) conceptualization of hypnosis. The ‘special process’ mislabel has been confusing to those new to the field as well as those endeavoring to understand hypnotic phenomena ever since. This label wrongly implies a state unachievable in everyday life under normal conditions, thus misleading researchers to believe that they do not need to address the occurrence of spontaneous hypnosis when testing the effects of hypnosis or suggestion. As Green *et al.* (2005) noted, ‘it is clear that shifts in consciousness can occur with and without formal hypnotic procedures in a variety of everyday situations . . .’ (p. 262). Hypnosis can occur within social contexts such as heterohypnotic inductions with or without the use of the word hypnosis, or spontaneously without any social influence or ‘hypnotic context’ (Barabasz, 2005/2006). For example, it occurs in self-hypnosis and/or absorption (J. R. Hilgard, 1974, 1979; Tellegen and Atkinson, 1974; M. Barabasz *et al.*, 1983; Barabasz, 1984), and may occur spontaneously in persons of average or above average hypnotizability (Barabasz, 2005/2006). Thus, hypnotic responses are ‘those responses and experiences characteristic of the hypnotic state’ (Killeen and Nash, 2003, p. 208), which include instances of spontaneous hypnosis.

In her classic book on imaginative involvements, Josephine Hilgard (1979) devoted several chapters to the explication of spontaneous hypnosis and its occurrence as part of everyday life for hypnotizable persons. Numerous other findings in the literature are succinctly summarized by Herbert and David Spiegel’s explanation that the ‘hypnotic trance-state falls on a continuum with normal waking consciousness and that individuals with trance capacity commonly slip in and out of trance-states’ (H. Spiegel and

D. Spiegel, 2004, p. 11). This is an all too frequent occurrence among certain students listening to my (A. F. B.) academic lectures despite their consumption of substantial amounts of Starbucks coffee. The spontaneous trance phenomenon is well documented by systematic observation (Mullin, 1958, 1960), controlled experiments in the isolation of Antarctica (Barabasz, 1980, M. Barabasz *et al.*, 1983), in clinical practice (Hilgard and LeBaron, 1984; Watkins, 1992; Spiegel and Spiegel, 2004) and in experimentally controlled laboratory research (E. Hilgard, 1965, 1986; J. Hilgard, 1974, 1979; Barabasz, 1982, 1990*a,b,c*, 1993; Kihlstrom, 1987). Unfortunately, some researchers do not consider the potential occurrence of spontaneous trance in the design of their research methodologies or in the explanations of their findings. Thus, their conclusions about the supposed equivalence between hypnotic and ‘nonhypnotic’ conditions are equivocal.

13.2.1. Brain imaging techniques

Another ongoing problem is the challenge of communicating the findings from brain imaging and electroencephalographic (EEG) research on hypnosis to researchers and professionals who lack the training and expertise specific to this rather esoteric endeavor. The significance of findings gleaned from neurophysiological studies is difficult to evaluate by those who lack the training and education in the underlying techniques and mechanisms. The first author spent one day a week for an entire year in the EEG unit of a large hospital to learn measurement techniques and to interpret EEG findings before embarking on studies of the effects of hypnosis and isolation on EEG in Antarctica (Barabasz, 1980). A decade later, when this event-related potential (ERP) EEG research was presented in a symposium devoted to that topic at the Annual Scientific Meeting of the Society for Clinical and Experimental Hypnosis, it was disappointing to hear the discussant’s remarks. Although widely published in the socio-cognitive sphere, his remarks began with, ‘I wouldn’t know an ERP from a nuclear explosion, but . . .’ The essential conclusion conveyed by the discussant was that although he did not understand EEG methodology he did not ‘believe’ the findings from any of the five laboratories represented in the

symposium, who reported converging findings from independent studies. Thus, it was refreshing to see that the initial article produced by the Tennessee Conference on Brain Imaging and Hypnosis oriented consumers by beginning with a primer on brain imaging technologies (Ray and Oathes, 2003).

Ray and Oathes (2003) explained that in the last decade, functional brain imaging techniques have ranged from functional magnetic resonance imaging (fMRI) to positron emission tomography (PET), to sophisticated EEGs. Ray and Oathes indicated that papers in a variety of neuroscience journals have used these measures in relation to the hypnotic experience and its modulation of critical human processes such as pain. They pointed out that there is a potentially rich interplay that can take place in developing understandings of the hypnotic experience from the perspective of cognitive and affective neurosciences. However, for this interplay to manifest, it is critical for the reader to understand brain imaging procedures and the types of questions they do and do not answer, as well as the ones they cannot answer.

Ray and Oathes (2003) began by explaining that Hans Berger was the first to use EEG techniques in the 1920s. Electrodes were placed on the participant's scalp to record electrical activity produced by the brain with the intent of revealing underlying brain processing. The International 10/20 system (Jasper, 1958) was used to standardize the location of electrode placements. The locations, named in terms of the brain areas they were intended to measure, included frontal, temporal, central, parietal and occipital. They were numbered so the odd numbers referred to the left side of the brain and the even numbers to the right side, with a 'z' used to specify the midline central electrode positions.

This early work, as it relates to hypnosis, was based almost entirely on simple frequency analysis conducted through either visual inspection or rather Byzantine analog filters, from which digital outputs were produced (Barabasz, 1980, 1982). These data were only sometimes corrected for physiological arousal (Barabasz, 1982). More recently, signal processing techniques, such as Fourier transforms, coherence and wavelet analyses, have been used (Barabasz, 2000). All of these procedures are simply aimed

at taking a signal and decomposing it into frequency components (bands). Typically, the bands most commonly examined are theta (4–8 Hz), alpha (8–13 Hz), beta (17–32 Hz) and sometimes gamma (30–60 Hz). The amount of EEG theta activity in an eyes-closed record has been positively associated with hypnotizability. The locus of this theta activity is in the anterior cingulate cortex (ACC).

Far more useful to the explication of the brain's unique responses to the hypnotic state versus that of relaxation, suggestion alone or a variety of other social influences is the ERP. ERPs are far more useful than frequency analysis because they show EEG activity in relation to a particular time-locked event such as a set of tones produced by an audiological generator. The simple visual inspection of EEG records in the state of hypnosis versus other conditions reveals little to the naked eye that can be discerned from the EEG record in general. However, if the subject is presented with several stimulus repetitions, we can take repeated snapshots of EEG responses. Now, if we were to overlay say two dozen snap-shots of the subject's reaction to a repeated olfactory stimulus and pass a bright enough light through those transparencies we would be able to see a discernible reaction pattern to the stimuli which otherwise would be obscured by the general EEG record.

Rather than using photographic snap-shots, ERP analysis is accomplished by mathematical processing. For example, if we take EEG records in the half second following the stimulus presentation and average these together, we are able to note the brain's response to the stimulus in whatever condition the subject is exposed to. The waveform is usually described in both positive and negative going peaks, as well as the time in milliseconds elapsing from the stimulus presentation. As Ray and Oathes (2003) explained, 'thus, a P300 waveform is a peak in the ERP in the positive direction occurring (approximately) 300 milliseconds after stimulus presentation' (p. 98). This is usually referred to in the literature as the P3, as it is the third positive peak following the stimulus. The negative going peaks are labeled N, with the N prior to the number of milliseconds, or N1, or N2.

Unlike the earlier EEG frequency analysis research, ERPs studied in the 1980s (Barabasz

and Lonsdale, 1983; Spiegel *et al.*, 1985, 1989) were replicated and extended in the 1990s (Barabasz *et al.*, 1999; Barabasz, 2000; Calvin, 2000; De Pascalis *et al.*, 2001; Jensen *et al.*, 2001). These recent studies were recognized by a series of national awards as the first studies to demonstrate that ERPs following a hypnotic induction with a suggestion for a hallucinatory blocking stimulus showed alterations in consciousness which corresponded closely to the participant's subjective experiences of perceptual alterations. Such responses could not be produced by relaxation alone, role-playing, expectancy or the identical suggestion without hypnosis, thus providing consistent data revealing the neural underpinnings of the hypnotic state as opposed to responsiveness to mere suggestion or role-playing without hypnosis.

The ERP findings were remarkably consistent among studies produced from a variety of laboratories. The data converged with research demonstrating activation of the ACC during a hallucination among subjects who could experience hypnosis (Szechtman *et al.*, 1998), suggesting that a hypnotic hallucination was not produced by the simple imaging of external stimuli. Together, these findings represented a giant step forward because they could be time-locked to events by reflecting millisecond changes in the electrical activity of the cortex. Although valuable, one limitation of ERPs is that they are unable to tell us precisely where in the brain the activity measured on the scalp originated. However, one technique that can provide this type of information is PET.

PET systems are used to measure cerebral blood flow associated with brain activity. As Ray and Oathes (2003) reminded us, the brain obtains oxygen and glucose via blood flow from which it gets its energy. The direct relationship between brain activity and blood flow makes it possible to determine which areas of the brain are more or less active during particular tasks. Participants inhale or are injected with a radioactive isotope to produce a tracer which travels in the bloodstream and is recorded by the PET gamma ray detector. One procedure is to make a measurement during a control condition which is then subtracted from the reading which is produced during an experimental task. PET measures almost any molecule that can be radioactively labeled, thus making it

possible to answer questions specifically about perfusion, metabolism and even neurotransmitter turn-over.

Ray and Oathes (2003) cited research from three independent laboratories which have used PET to index the changes in the hypnotic experience. In a precursor to modern three-dimensional PET measures, Crawford *et al.* (1993) used a two-dimensional measure of cerebral blood flow to test the differences between high and low hypnotizables. This research was well ahead of its time in its clever use of blood flow methodology. Data were collected in two separate sessions, one hypnotic, one nonhypnotic, each of which included three conditions: rest, ischemic pain and ischemic pain with hypnotically induced analgesia. During the nonhypnotic conditions, low and high hypnotizables showed similar mean blood flows. However, in the hypnotic conditions, the low hypnotizables remained the same, while those who were capable of hypnosis showed a dramatic increase in xenon gas-marked cerebral blood flow. This finding was not in any way related to differences in breathing rates or carbon dioxide consumption.

In another study, Szechtman *et al.* (1998, study 1) measured regional blood flow in four conditions: rest, while listening to a recorded attentional message, while imagining hearing the message and while hypnotically hallucinating hearing the message. This study revealed activation of areas of the brain associated with the various tasks and showed that the ACC was activated only during hypnotic hallucinations.

The next study, initiated from David Spiegel's group, was the Stanford and Harvard investigation by Kosslyn *et al.* (2000). We view this study as one of the most elegant examples of research on the physiology of hypnotic responding extant. Participants were assigned to either a hypnosis or a mental imagery condition, both of which involved identical suggestions but the latter did not invoke hypnosis. Only in the hypnosis condition were color areas of the left and right hemispheres activated when subjects were asked to perceive color. Importantly, this occurred whether they were actually shown the color or a grayscale stimulus.

Unlike a number of other brain imaging studies, the Kosslyn *et al.* (2000) study analyzed only the areas of the brain that were hypothesized to

be regions of interest *a priori*. One weakness of the hypnosis–brain response studies in the last century was that it was common to obtain measures from a wide variety of sites and then produce *post hoc* explanations in attempts to support a general hypothesis. In the Kosslyn *et al.* study, the hypothesis was that if the hypnotized participants perceived the hypnotic hallucination as real, blood flow in the color-processing region of the brain during the hypnotic hallucination would be consistent with blood flow during veridical perception. Just as in Barabasz’s (2000) ERP study of an auditory-blocking hallucination, Kosslyn’s color hallucination response to a hypnotic suggestion to perceive differently occurred only after hypnosis had been successfully induced. The PET effects were different for the mental imagery condition, which used the identical suggestion in a nonhypnotic condition. The suggestions and social demands for performance were otherwise completely identical, yet, consistent with all of the modern controlled ERP studies, the brain responses reflected the subjective perceptions of the participants. Hypnosis was shown to be a psychological state with distinct neural indices, which could not be explained as just a result of adopting a role (social influence). We discuss this important research in more detail below.

13.3. Research presented at the Tennessee Conference on Brain Imaging and Hypnosis

We now summarize the three main areas of research presented at the Tennessee Conference on Brain Imaging and Hypnosis, including the work of Rainville and Price, Spiegel and colleagues, and Ray and De Pascalis. To begin, we describe and discuss Rainville and Price’s work on hypnotic alterations in the brain’s arousal and attention systems and the brain structures associated with the regulation of consciousness. We then describe and discuss Spiegel and colleagues’ research on brain activity associated with perceptual alterations during hypnosis. Finally, we describe and discuss Ray and De Pascalis’s work on the relationship between hypnotic pain, analgesia and brain activity.

13.3.1. Hypnosis phenomenology and the neurobiology of consciousness

Rainville and Price (2003) reviewed recent developments in both the philosophical and neurobiological studies of consciousness. They described a model of conscious phenomenology that demonstrates the experiential characteristics of hypnosis in the areas that, decades before, E. R. Hilgard (1979) elucidated as the domain of hypnosis. Changes in mental ease (typically relaxation) and absorption (focused attention) produced by routine hypnotic procedures are reflected by specific changes in brain activity within structures critically involved in the ‘body–self’ regulation of consciousness. Consistent with Barabasz *et al.* (1999) who showed that ERP markers ‘. . . reflect alterations in consciousness that correspond to participants’ subjective experiences of perceptual alteration’ (p. 18), Rainville and Price’s model of consciousness shows that the experiential dimensions of relaxation, absorption, orientation and self-monitoring reflect basic phenomenal properties of consciousness. Changes in these experiential dimensions produced by hypnosis are associated with changes in activity within the brain structures associated with each. Importantly, this is consistent with the explanation of hypnosis as an altered state of consciousness.

The notion that the state/nonstate, social-psychological and altered state of consciousness ‘debate goes on’ (Kirsch, 2003) or that the issue is ‘unresolved’ (Sarbin, 2005) is now maintained by the few (see Christensen, 2005 for survey findings) but vocal members of the learned hypnosis societies who continue to attempt to conceptualize hypnosis as a mundane social construction. Nonetheless, at the time of the Tennessee Conference on Brain Imaging and Hypnosis and the subsequent article by Rainville and Price (2003), the matter was still legitimately debatable. Rainville and Price (2003) emphasized that this stemmed partly from difficulty in attributing states and contents of consciousness to others, which is captured by the essential distinction between our inherent first-person perspective on consciousness phenomena and the third-person perspective we have on the behavioral and physiological responses which index the phenomenal quality of experience.

In their article, they considered the indirect assessment of consciousness by third party accounts and noted that the importance of the distinction between first-person and third-person accounts is, like in the early research on sleep, not unique to hypnosis. Rainville and Price explained that two criteria need to be met in order to support a state theory of hypnosis. First, they suggested that the induction of hypnosis should be shown to produce changes in aspects of phenomenal experience that are not restricted to specific perceptual domains or experiences, or to specific contents of consciousness. Second, they noted that the induction of hypnosis should engage the specific neurophysiological mechanisms involved in the regulation of consciousness states. Thus, Rainville and Price convincingly demonstrated that the combination of experiential and modern brain imaging methods can provide new substantiated observations supporting the conceptualization of hypnosis as an altered state of consciousness.

The authors adopted what they viewed as a relatively simple approach to the problem of hypnosis in consciousness, whereby if hypnosis is an altered state of consciousness then the phenomenal experience of being hypnotized must be characterized by changes in aspects of phenomenal experiences that are essential to wakeful consciousness in general. Also, one should be able to demonstrate that hypnosis involves brain systems responsible for the regulation of states of consciousness. That is to say, changes in phenomenal experience that characterize hypnosis must also be accompanied by changes in brain activity within the specific areas that are known to play a critical role in the regulation of the corresponding features of consciousness states. This viewpoint reflects the underlying thesis of decades of ongoing research from David Spiegel's Stanford Medical School laboratory, David Oakley's University College of London laboratory, De Pascalis's University of Rome laboratory and our own research from Harvard Medical School, University of Canterbury, New Zealand and Washington State University laboratories.

13.3.1.1. Entry into the hypnotic state produces changes in brain activity

In perhaps one of the last studies to use EEG ERPs to investigate hypnosis, induction effects

were tested against the effects that might be wrought by suggestion alone. Barabasz (2000) investigated responses to alert hypnosis with a blocking auditory hallucination. In this experimentally controlled study, hypnotizability testing, informed consent mentioning hypnosis and the 'suggestion only' condition were completely separated from the context of the hypnotic condition. Consistent with our previous research, as well as research by Spiegel and colleagues and De Pascalis and colleagues, only the hypnotizable subjects showed a statistically significant attenuation of their ERPs in response to the induction plus suggestion condition, in contrast to the identical (except for the hypnotic induction) suggestion alone condition.

By chance, the study also revealed something quite remarkable. One subject out of the five high hypnotizables responded with essentially equivalent ERPs to both formal hypnotic induction as well as the suggestion-only conditions. A post-experimental inquiry conducted by an experimenter unaware of this finding revealed that this subject spontaneously entered hypnosis in both the suggestion-only and hypnosis conditions. As Killeen and Nash (2003) pointed out, an initial suggestion can constitute the hypnotic induction. If, by chance, two of the five hypnotic virtuosos had responded in this manner, and if the potential of spontaneous hypnosis was ignored by failing to conduct the post-experimental inquiries, a faulty conclusion about the equivalence of the hypnotic and 'non-hypnotic' conditions would have been the result.

The social psychological hypnosis literature is littered with studies that fail to be sensitive to this potential confounding variable. Conclusions about the supposed equivalence of hypnotic and 'nonhypnotic' responses based on studies flawed by the failure to consider spontaneous hypnosis are, therefore, misleading. In a widely cited article, two leading socio-cognitive hypnosis researchers (Kirsch and Lynn, 1995) explained their belief that the hypnotic induction, or presumably for that matter entry into hypnosis by spontaneous means, made little difference as to what might be achieved by suggestions made thereafter. Disproving this notion, the experimentally controlled ERP EEG research indicates that entry into the hypnotic state not only produced significantly different responses from the

hallucination to block auditory stimuli, but showed EEG responses of attenuated ERPs which corresponded closely with the subjective perceptions of the participants.

Nonetheless, it was still critically important not only to replicate and extend this research further but also to test the hypothesis that the feeling of being hypnotized involves changes in activity within the network of brain structures critically implicated in the regulation of states of consciousness. In two separate experiments, this is precisely what Rainville and his colleagues did (Rainville *et al.*, 1999, 2002). First, Rainville *et al.* (1999, 2002) examined the effects of hypnotic induction on regional distribution of cerebral blood flow (rCBF) using PET. Scans were acquired in a baseline condition, after a standard hypnotic induction, and during the experience of the hypnotic state. As summarized by Rainville and Price (2003), hypnosis-related changes were first determined by comparing hypnosis and baseline conditions. Changes in rCBF were significantly related to changes in those specific aspects of the experience of being hypnotized. They noted that the global changes observed in those two studies were reliable and similar to those found in an independent study by Maquet *et al.* (1999). These data are consistent with those reviewed by Oakley (Chapter 14, this volume). The specificity of effects for the hypnosis condition versus the nonhypnotic conditions was entirely consistent with those obtained from our EEG ERP research (Barabasz and Lonsdale, 1983; Barabasz *et al.*, 1999; Barabasz, 2000; Jensen *et al.*, 2001) as well as those of Calvin (2000) and De Pascalis *et al.* (1999, 2001).

Rainville and Price (2003) summarized the ground-breaking findings replicated from those studies. The data clearly demonstrated that the induction of hypnosis produced important and reliable changes in the relative level of activity in several brain regions, which reflected subjects' perceptual changes. These findings support a state conceptualization of hypnosis. The predicted effects were found in the brainstem, thalamus and the ACC. Rainville and Price's first investigation showed that ACC activity was significantly increased by the hypnotic induction in a sector halfway between the posterior border of the ACC and the genu of the corpus callosum.

The second study replicated the same area of the ACC as highly significant and also implicated rostral sectors of the ACC (+29 to +43 anterior to the anterior commissure). The thalamus and brainstem were also implicated. Specifically, there were significant and robust differences between changes in rCBF specifically associated with subjective feelings of relaxation and absorption following the hypnotic induction condition. They noted similarities between some specific events of hypnotic relaxation and the effects of slow-wave sleep. Previous findings have suggested that slow-wave sleep and decreased vigilance reflect engagement of similar mechanisms (Paus *et al.*, 1997).

Thus, hypnotic relaxation apparently reflects a state of decreased vigilance and an attenuation of the state of readiness to engage with or orient toward external sources of stimulation. These findings, as discussed by Barabasz and Watkins (2005), reflect almost precisely the behavioral descriptors of the domain of hypnosis noted by Hilgard (1992; see also Kihlstrom, Chapter 2, this volume). Decreases were observed in posterior parietal cortices within areas associated with orientation and attention, external visual, auditory and somatosensory stimuli. Rainville and his colleagues identified the specific regions of the brain and the activity in those regions that could only be produced by hypnosis. These were reflected in the studies of visual hallucinations by both our laboratory (Barabasz *et al.*, 1999) and Spiegel and his collaborators (Spiegel *et al.*, 1985). The auditory hallucination findings from our laboratory (Barabasz *et al.*, 1999; Barabasz, 2000) also converge with the findings from David Spiegel's laboratory at Stanford (Spiegel *et al.*, 1989) demonstrating an attenuation of the ERP P300 in response to a hypnotic suggestion for reduced perception only for hypnotizables in the hypnosis condition. Rainville and Price noted the striking contrast between the effects of hypnotic relaxation versus those of absorption, which were specifically associated with co-ordinated increases in the level of activity within the ponto-mesencephalic brainstem, the thalamus and the rostral ACC. Thus, we now have data that this contrasting kind of activation associated with hypnotically induced relaxation in contrast to absorption may reflect either competing processes acting on the same populations

of neurons or, alternatively, entirely separate neurophysiological processes within the same structures. In either case, the responses are unique to the state of consciousness brought about by hypnotic relaxation versus absorption alone. Rainville and Price viewed their findings as supporting a definition of hypnosis as ‘changes in subjective experience induced by suggestions and characterized by mental ease, absorption, reduction in self-orientation and automaticity’ (p. 113). Consistent with the data on spontaneous hypnosis, they noted that suggestions could be given by another person or via autohypnosis. They noted that reports ‘of feelings of automaticity, effortlessness, or lack of control are useful in establishing the presence of the hypnotic state’ (p. 113).

13.3.2. Negative and positive visual hypnotic hallucinations: attending inside and out

David Spiegel’s (2003) contribution to the Tennessee Conference on Brain Imaging and Hypnosis focused on experimental studies showing that hypnotic perceptual alteration affects brain function. It is well established that the hypnotic alteration of perception is accompanied by measurable changes in both brain electrical activity and blood flow. Spiegel explained that the major issue in the field has moved onto the question of determining the extent to which hypnotic perceptual alteration, in general, and hypnotic analgesia, in particular, can be accounted for by attentional shifts in contrast to changes in primary perceptual processing. While both may be involved, De Pascalis (1999) provided a basis for putting primary emphasis on attentional redeployment. Spiegel pointed out that what must be addressed now is the neuro anatomical location of the crucial changes. Are both alterations in the primary sensory association cortices and elements in the attentional system involved or does one primary location account for the shifts in attention that can be brought about by the hypnotic state?

The early years of ERP research produced inconsistencies in the findings. Spiegel explained that about half of the 20 early studies demonstrated that a hypnotized person reduced perception of the stimulus, showing corresponding

changes in ERP amplitudes in response to that stimulus. But, these early studies suffered from a number of problems. Frequently, they used patients rather than normal populations, including those who had suffered some form of brain trauma, and more often than not subjects who had been diagnosed with psychiatric or neurological diseases. Sample sizes often were too small to draw sensible statistical inferences, and the semi-quantitative analyses of ERP amplitudes were inconsistently evaluated across studies.

In contrast to the early research, the decade of the brain produced a series of studies which consistently demonstrated ERP amplitude changes that were reflective of the perceptual alterations produced by hypnosis. A sampling of studies supporting this finding includes hypnotic modulation of ERPs to visual (Spiegel, 1985; Spiegel and Barabasz, 1988; Jasiukaitis *et al.*, 1996; De Pascalis and Carboni, 1997; Barabasz *et al.*, 1999; Calvin, 2000), olfactory (Barabasz and Lonsdale, 1983) and somatosensory perceptual stimuli (Spiegel *et al.*, 1989; De Pascalis *et al.*, 1999, 2001).

In the earliest of what later became viewed as the modern group of studies on ERPs, Barabasz and Lonsdale (1983) employed the real-simulating control condition which had not been used in prior ERP research. The design, as explained by Orne (1959; see also Barabasz and Barabasz, 1992; Cox and Bryant, Chapter 12, this volume), employs a group of stringently selected low hypnotizables, as well as highs, but the lows are instructed to role-play as one would act if actually hypnotized and told that if the experimenter detects the simulation the participant will be so informed and the experiment stopped.

The real-simulating control procedure makes it possible to determine what can be wrought by suggestion alone versus that which can be wrought by the hypnotic state. Strong, weak (laboratory-grade eugenol) and neutral odor conditions were presented to subjects in both nonhypnotic and hypnotic conditions with a suggestion for anosmia to ammonia (a negative olfactory hallucination). The instruction from the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C), is: ‘You can no longer smell anything at all’. At the time, it was not known that according to Orne’s concept of trance logic

(see Barabasz and Watkins, 2005, p. 67), in order to experience a negative hallucination, a truly hypnotized subject must first feel (sense) the actual stimulus, in order to not feel it, and that this initial reaction would be reflected in the brain's response. In other words, one must first perceive the stimulus in order to attenuate the response to it. We found that ERP P300 amplitudes increased consistently for only the high hypnotizables in the actual hypnosis condition, but not for the lows in the hypnosis condition or the highs in the nonhypnotic condition.

Two years later, Spiegel and his colleagues (Spiegel *et al.*, 1985) employed a visual blocking hallucination and found that highly hypnotizable individuals in the hypnosis condition produced significant amplitude reductions in both the P100 and the P300 visual ERP components in response to a suggestion of an obstructive hallucination (hallucinated cardboard box blocking the view of the stimulus generator). Further substantiating his findings, Spiegel (Spiegel *et al.*, 1989) found a very significant P300 reduction to somatosensory stimulation after a suggestion of hypnotic numbness. Later, Spiegel and his colleagues (Jasiukaitis *et al.*, 1996) determined that the reduced P100 did not seem to reflect a special process different from inattention. Ray and De Pascalis (2003) supported that conclusion.

However, there was a puzzling apparent contradiction which remained between an increased P300 in response to a hypnotically induced hallucination ('you will smell no odors'; Barabasz and Lonsdale, 1983) and the reduced P300 amplitude shown in the Spiegel *et al.* (1985) study, which instructed subjects to hallucinate a cardboard box blocking the stimulus generator. That apparent contradiction was exploited by Spanos *et al.* (1992) who stated that our results were inconsistent. But well before the Spanos *et al.* (1992) article, David Spiegel and I (A. F. B) examined our research methodologies and analyses in the two studies. Finding no flaws in our data collections, analyses or methodologies, we deduced that the difference in the increased (Barabasz and Lonsdale, 1983) versus attenuated (Spiegel *et al.*, 1985) ERP P300 was due to the nature of the hypnotic instructions used (Spiegel and Barabasz, 1987, 1988).

As discussed earlier, the Barabasz and Lonsdale study used the obliterating suggestion from the Stanford scale, which told the subject he or she would smell nothing. In fact, as we later learned, and as might have been predicted by Orne's trance logic, one has to sense a stimulus clearly in order not to experience it when hypnotized and instructed to deal with the stimulus (reduce or eliminate perception of it, e.g. pain). The highly hypnotizable subjects were expecting that they would smell nothing and were in fact surprised that they smelled anything at all, even though the strong odors were perceived (reported) as faint. Since high hypnotizables are accustomed to experiencing hypnotically suggested effects, the surprise effect of smelling something in the face of the hypnotic instruction that they would smell nothing (complete suppression of the stimulus) would be reflected in the EEG P300 as an increased rather than decreased ERP. As noted by Barabasz and Lonsdale (1983), the surprise effect in ERP responses is a consistent phenomenon (Baribeau-Braun *et al.* 1983).

In contrast to Barabasz and Lonsdale's use of an obliterating hallucination suggestion, Spiegel's group used an obstructive blocking hallucination involving placement of a cardboard box in front of the stimulus generator. A 'box' which blocks one's view does not demand complete suppression of stimulus perception, given that there may be flashes of the stimulus around the outside edges of the box. Perception of the stimulus was dramatically reduced, and this was reflected in the attenuation of subjects' P300 ERPs. Additional support from De Pascalis and Carboni (1997) confirmed Spiegel *et al.*'s (1985) P300 attenuation findings. Nonetheless, our hypothesis remained to be tested in a rigorously controlled experiment, which compared obliterating and blocking negative hallucination instructions.

Barabasz *et al.* (1999) compared obstructive hallucination instruction and the obliterating hallucination instruction with both visual and auditory stimuli using the real-simulating design. The obstructive hallucination produced a reduced ERP P300 amplitude, whereas the obliterating negative hallucination produced an increased amplitude. The Barabasz and Lonsdale, Spiegel *et al.* and De Pascalis and Carboni findings were replicated and extended.

The crucial difference in the two instructions was in the robustness of the obstructive hallucination paradigm. An obstruction to a perception need not be complete or perfect. One might well expect to see light through a curtain or box ‘. . . this does not challenge the vividness or effectiveness of the obstructive visual hallucination.’ (Spiegel, 2003, p. 132). Thus, any degree of perceptual alteration still allows participants to stay within the instructed paradigm. Participants can focus on it rather than evaluate it or deal with competing input, thus accounting for the associated and expected reduction in ERP amplitudes. The reliability of these findings (Barabasz *et al.* 1999) was further supported in complete replications by Calvin (2000), Jensen *et al.* (2001) and Barabasz (2000). Spiegel (2003; see also Chapter 7, this volume) pointed out that these studies demonstrate the importance of the specific wording and the nature of hypnotic instructions when studying their neurophysiological concomitants. Consistent with clinical lore from decades earlier, the nature of the hypnotic instructions can be very important.

13.3.2.1. Positive and negative hypnotic hallucinations and brain function

As briefly mentioned earlier in this chapter, Spiegel and his colleagues radically advanced the field when they used the far more precise PET methodology and observed that changes in the subjective experience produced by hypnosis were reflected in brain function. Spiegel’s exquisitely controlled experiments using both EEG and brain imaging technologies showed how hypnosis could reduce perception by creating an illusory obstruction to reduce brain responses. Hypnotic alteration of perception was accompanied by measurable changes in both perceptual and attention function of those specific regions of the brain that process these activities.

As discussed briefly earlier, Kosslyn *et al.* (2000) examined rCBF in the ‘color’ area (fusiform/lingual region) of the brain. Kosslyn *et al.* (2000) selected participants for high hypnotizability and asked them to see: (1) a colored pattern in color; (2) a grayscale pattern in color; (3) a color pattern as a grayscale; and (4) a grayscale pattern as a grayscale during PET scanning. Participants were exposed to these four

conditions once following hypnosis and once without hypnosis. The well-established ‘color area’ in the fusiform/lingual region of the brain was activated when participants were asked simply to see color as color, but not when they were asked to see gray as gray. Thus, greater rCBF was found in response to the color stimulus. However, once the hypnotic state was established, color areas in the brain were activated when subjects were asked to perceive color, whether they were actually shown a color or the grayscale stimulus. These results were observed only during hypnosis and only in the left hemisphere color region. Once again, in contrast to the role-playing/social influence notion, there is strikingly clear and consistent evidence that only the hypnotic state itself produced changes in brain function consistent with the perceptions sought. As Spiegel puts it, ‘in this case, believing is seeing.’ (Spiegel, Chapter 7, p. 187 this volume).

13.3.3. Hypnotic changes in attentional systems

As mentioned, Spiegel (2003) demonstrated that hypnotic alterations in perception were accompanied by changes in attentional systems. Spiegel (2003) explained that the narrowing of attention involved in hypnotic concentration was reflected by activation of the anterior as opposed to the posterior attentional brain systems. As several studies have implicated, this is especially so in the executive attention function of the anterior cingulate gyrus.

Research has also demonstrated that changes in attentional systems during hypnosis are associated with dopaminergic activity. Spiegel and King (1992) provided the first evidence that hypnotizability was correlated with levels of a dopamine metabolite—homovanillic acid (HVA)—in the cerebrospinal fluid. Additionally, the ACC receives dopaminergic innervation from the ventral tegmental nucleus (Raz and Shapiro, 2002) and the gene that is responsible for the production of catechol-*O*-methyl transferase, which releases dopamine, is also apparently related to hypnotizability (Lichtenberg *et al.*, 2004). Dopaminergic neurotransmission also affects the prefrontal cortex which shows measurable changes in arousal/activation when hypnotic analgesia

is evoked to ameliorate painful stimuli (Crawford *et al.*, 2000). The apparent convergence regarding a role for dopamine in hypnotizability is interesting, but is drawn from studies with a variety of methodological foci. Considerable further research is needed to shed more light on this hypothesis.

13.3.3.1. Words and images

Spiegel and Spiegel (2004, p. 20; see also Spiegel, Chapter 7, this volume) defined hypnosis as a narrowing of the focus of attention which is a form of focal concentration that maximizes involvement with one sensory perception at a time. Consistent with mechanisms similar to those described by Hobson and Stickgold (1995) for dreaming, this appears associated with shifts in the attentional balance to the anterior regions of the brain. As in the Kosslyn *et al.* (2000) experiment, hypnotically suggested images are processed in the brain as though they have been received from the outside as actual stimuli. Thus, the vividness of hypnotic imagery and the phenomenon of hypnotic hallucination results in altered brain responses such as a reduction or increase in ERP amplitude.

Hypnosis apparently involves an inversion of the usual means of processing words and images (Spiegel, 1998a,b, Chapter 7, this volume). In nonhypnotic alert conditions, we generally respond to images and manipulate words, but when deliberately hypnotized (as in heterohypnosis rather than spontaneous hypnosis), we respond to the words of the hypnotist to manipulate images. Spiegel (2003) emphasized that in hypnotic trance we accept verbal input uncritically but then are capable of manipulating images and perceptions. Indeed, much of the power of the hypnotic state involves the uncritical acceptance of the implausible, as demonstrated in Spiegel *et al.*'s (1989) study of ERPs where verbal instructions to make the body cool or numb could over-ride the perception of painful somatosensory input.

13.3.3.2. Automaticity

In a discussion of Raz *et al.*'s (2002) investigation of the classical Stroop interference paradigm, Spiegel found further support for the focused attention model of hypnosis. In a classic Stroop task, individuals are asked to name the

ink-color of printed words. The words are typically either neutral (e.g. the word 'boat' printed in green ink), color-congruent (e.g. the word 'blue' printed in blue ink) or color-incongruent (e.g. the word 'blue' printed in red ink). Because reading is believed to be automatic, individuals are slower to respond to incongruent words than congruent or neutral words. Similarly to previous research from several laboratories (Sheehan *et al.*, 1988; Nordby *et al.*, 1999), Raz and colleagues attempted to eliminate Stroop interference by instructing subjects that the words they would see would be written in a foreign language that had no meaning. The idea was to use hypnosis to focus the subject on just one portion of the stimulus, thus reducing Stroop interference. The ERP studies have demonstrated that the hypnotic instructions can be critical. Raz *et al.*'s (2002) findings were consistent with Nordby *et al.* (1999) and Sheehan *et al.* (1998), and suggest that hypnosis can alter automaticity of word processing, a finding that is consistent with the new understanding that hypnosis may modulate one's sense of agency.

More than a decade ago one last cogent attempt was made by Kirsch and Lynn (1995) to bring the altered state conceptualization of hypnosis within a socio-cognitive domain. A critical point to persuading readers to join that viewpoint hinged on their citation of a review by Dixon and Laurence (1992). Dixon and Laurence outlined contradictions in findings and failures to replicate physiological studies supporting the state conceptualization of hypnosis. However, these contradictory findings were progressively explained, and Raz *et al.* (2002) noted that the only apparent contradictory finding remaining (Dixon and Laurence, 1992) regarding the hypnotic elimination of the Stroop effect could now be accounted for by differences in hypnotic instructions.

13.3.3.3. Hypnotic attention versus vigilance

In this important explanatory feature of his research report, Spiegel (2003) accounted for the observed difference in amplitude responses between the obstructive (reduced amplitude) and negative obliterating (enhanced amplitude) hallucination conditions in the series of studies

produced from Barabasz's laboratory (as discussed earlier), by the focusing model of hypnosis involving the anterior attentional system and the anterior cingulate gyrus in particular. What appears to happen is that breaching of a negative hallucination instruction tends to trigger vigilance—something unexpected is happening and that breaks with the paradigm, thus it is likely to activate the posterior attentional system. This finding has considerable implications for clinicians. Clinicians with experience in hypnosis frequently structure hypnotic suggestions in a manner that allows for a variety of responses to occur in both type and intensity (Spiegel and Spiegel, 1978; Crasilneck and Hall, 1985; Barabasz and Watkins, 2005). Spiegel (2003, p. 136) noted, 'the crucial thing is that the hypnotic state and the task performed within it, reinforce rather than contradict one another, thereby facilitating the increase in circuit redundancy or activation rather than requiring arousal in external scanning awareness for new means of interpreting perceptions'. In the case of hypnotic analgesia, Spiegel explained that the recent work by De Pascalis *et al.* (1999, 2001) shows just how important the type of hypnotic analgesia instruction can be. They found that focused analgesia as well as dissociative imagery reduced ERP P300s significantly more than did relaxation. Furthermore, smaller posterior parietal P300s were produced during hypnotic analgesia only among the high hypnotizables. This finding is entirely consistent with the other papers presented at the Tennessee Brain and Hypnosis conference (see also Spiegel, Chapter 7, this volume).

13.3.4. Temporal aspects of hypnotic processes: pain responses

At the Tennessee Brain Imaging and Hypnosis conference, Ray and De Pascalis (2003) focused on the temporal appearance of specific waveforms in relation to cortical processes involved in hypnosis in response to pain. They noted that research on the neurological underpinnings of hypnosis had resulted in recognition of hypnotic processes in top-tier journals, such as *Lancet*, *Nature*, *Proceedings of the National Academy of Sciences, USA* and *Science*, and that such recognition brings with it the responsibility to re-examine hypnosis from the

perspective of the data extant from the cognitive and affective neurosciences. They noted that by focusing on the role of timing (temporal aspects), it becomes possible to move away from broad models, previously used to describe the hypnotic experience, to the specifics of individual research studies. Nonhypnotic pain research shows that in terms of temporal processing, early ERP components are more sensory in nature, while the later components (P300) are more cognitive/emotional or, as Barabasz and Watkins (2005 pp. 219–220) put it, they represent 'suffering'.

As a primer for Ray and De Pascalis's contribution to the Conference on Brain Imaging and Hypnosis, let us first consider the pain experience. Barabasz and Watkins (2005, pp. 219–220) noted that two specific components of pain appeared to have been identified: namely, sensory pain and suffering. All pain experiences include both of these components, even though an individual may not discriminate between them, unless questioned. Sensory pain provides needed information to the individual that something is wrong. Frequently, the pain indicates the site of the disturbance. Sensory pain provides the key cues to the specific location and descriptors of pain, such as hot, burning, cold or aching. Sensory pain also serves a protective purpose to the organism, which should not be undervalued. People have been known to die because of the failure of their bodies to provide the warning of sensory pain.

Suffering is the affective component of pain; it describes how disturbing or bothersome the pain is to the patient (Barabasz and Watkins, 2005, p. 220). This component describes the overall impact and interpretation of suffering. The normal muscle soreness experienced by an individual after an intense resistance training workout, such as weightlifting (caused by the production of hydroxypropylamine and micro-muscle tears), certainly hurts, but the lifter is not bothered by it in the same way as the pain produced by an accidental injury. Similarly, the pain of childbirth of a welcome child produces hurt in a mother, but it is frequently without suffering. Both the weight lifter and the mother interpret the pain without the suffering component because for each of them it is associated with something they choose and value. Alternatively, the pain of cancer may not be intense, but the

suffering can be overwhelmingly frightening. It is the suffering, the affective component of pain, which leads to what can become immobilizing depression.

Modern electrophysiological approaches, including EEG ERPs, as well as fMRI, PET dense array EEG and magnetoencephalography (MEG) now make it possible to monitor cerebral functioning in humans as related to pain (Bromm and Lorenz, 1998). Light can be shed on the complexity of systems involving affective evaluation, attention, cognitive appraisal and arousal systems, which require the integrated activity of neural networks, cortical and subcortical structures. As Ray and De Pascalis explained further, using a variety of stimulation techniques, painful events have been shown reliably to produce an early contralateral response in the primary somatosensory cortex, followed by a more distributed contralateral activity in the 120–170 ms range that may also include ipsilateral components. They noted that late responses display a bilateral pattern of activation. But because, and this is the critical point, these later components are correlated with subjective reports of pain and only appear if the pain is felt, they are assumed to be related to cognitive or affective evaluation of the painful stimulus. ‘Thus, the crucial question is the manner in which sensory and emotional aspects of pain can be modulated in a variety of situations’ (p. 150).

13.3.4.1. EEG studies

The De Pascalis and Carboni (1997) study on the effects of obstructive hallucinations on visual ERPs is of particular interest to the current discussion because it not only replicates the work from our laboratory and that of David Spiegel’s laboratory, but goes on to show that these effects extend to the somatosensory event-related potentials (SERPs). In this study, electrical stimulation was delivered to the right wrists of 10 high and 10 low hypnotizable women engaged in a somatosensory target-detection task. The study was intended to evaluate the effects of hypnotic alterations of somatosensory perception on SERP peaks. Reductions in nociceptive (pain) stimulus perception were found in the highs when they were hypnotized and asked to imagine a glove that covered the stimulated wrist. This response was accompanied by

reduced P300 peak amplitudes over frontal and posterior regions in the left hemisphere. This finding indicated that the left posterior regions with the auxiliary activity of the left frontal regions played a role in the generation of hallucinated images. The reduction in the P3 peak in the posterior region of the left hemisphere is apparently a product of a competing effect between the hallucinated obstructive mental image and the processing of somatosensory stimulation. De Pascalis’s and Carboni’s findings are consistent with the hypotheses of David Spiegel discussed earlier.

To improve the emerging understanding of the dissociated control theory of hypnosis (Bowers, 1992, 1994; see also Woody and Sadler, Chapter 4, this volume), De Pascalis and Perrone (1996) focused on hypnotic analgesia. Bowers’s theory is an extension of the neodissociation model of hypnosis developed by E. R. Hilgard (1977) and J. R. Hilgard (1979). Bowers’s model explains that hypnotic analgesia is a product of a dissociated control mechanism and that mental imagery is a concomitant rather than a mediator of suggested analgesia in hypnosis. De Pascalis and Perrone (1996) measured EEG spectral amplitudes from both the frontal and central scalp sites as well as from the middle of the temporo-parietal-occipital junction and HR variability (normalized spectral power density for mid-frequency peak in the 0.06–0.14 Hz range and the high-frequency peak in the 0.15–0.32 Hz range, respectively). Only the highly hypnotizable participants in the hypnotic condition self-reported significantly reduced pain and distress levels, where hypnotic analgesia produced significant EEG amplitude reductions in the total (0.5–31.75 Hz), delta (0.5–3.75 Hz) and beta (13–15.75 Hz) bands over the left and, to a greater extent, the right posterior areas. Significant reductions in sympathetic activity accompanied the EEG changes. The data indicate that inhibition in the right hemisphere plays an important role in the relief of pain and is consistent with the conceptualization that right hemisphere activity modulates sustained attention as well as negative emotional states (Pribram and McGuiness, 1975; Tucker and Williamson, 1984).

Thus, as Ray and De Pascalis pointed out, ‘any successful hypnotic suggestion should allow

access to such brain changes' (p. 152). They measured SERP and skin conductance response (SCR; see Barabasz, 1982) changes during hypnotic suggestions of: (1) deep relaxation with the suggestion that the relaxed body would not feel any pain; (2) dissociated imagery with the suggestion of floating oneself out of the body and up into the air; (3) focused analgesia with the suggestion to focus on sensation in the stimulated arm and to experience it as if a glove was covering the hand and wrist; and (4) a placebo condition where the participants had their hands dampened with a colored mixture of water and alcohol described as a topical anesthetic. Adding to the elegance of this study, these conditions were compared with a nonhypnotic baseline condition. The highly hypnotizable subjects exhibited significantly greater pain intensity reductions than did medium and low hypnotizables only during the dissociated imagery and focused analgesia conditions. In the other conditions there were no pain differences between the hypnotizability groups. The temporal cortical region was the most sensitive in differentiating SERP responses among hypnotizability groups, with the highs showing significantly smaller P3 and greater N2 peaks during focused analgesia than did the other groups. Focused analgesia among the highs also produced the greatest reductions in subjective ratings of pain and distress intensities, which were directly accompanied by more significant task-related changes in P3 and N2 peaks at temporal sites. The higher pain thresholds and faster reaction times were paralleled (and supported) by a significantly lower frequency of skin conductance orienting responses.

The authors concluded that the dissociated imagery and, to a far lesser extent, the deep relaxation conditions displayed reductions in distress levels and significant task-related changes in N2 and P3 peaks. The findings, in general, further confirmed what was reported by Zachariae and Bjerring (1994), showing that different processes at cortical levels may be operating among focused analgesia, dissociated imagery and deep relaxation conditions. The common effect among the conditions is enhanced inhibitory processing. The behavioral and physiological measures clearly showed that focused analgesia involving the production of an obstructive hallucination

(consistent with the ERP studies coming from De Pascalis's own laboratory, as well as those from Spiegel's and from Barabasz's, which were discussed earlier in this chapter) was the most effective in reducing pain.

De Pascalis explained that because the suggestion to produce an obstructive hallucination (focused analgesia) required less processing capacity, the executive initiative and effort were less involved during this specific hypnotic instruction, thus providing physiological support for Bowers's (1994) dissociated control hypnotic state conceptualization. This entire group of studies, without exception, refute the socio-psychological theory of hypnosis proposed by Spanos (1991, 1992; see also Lynn *et al.*, Chapter 5, this volume), which presumes that hypnotic analgesia is achieved by the use of cognitive-behavioral strategies involving distraction. There is no neurophysiological evidence whatsoever supporting the distraction notion.

Smith *et al.* (1996) also explained that Spanos (1991; Spanos *et al.*, 1992) believed that 'anyone could reduce pain through distraction by doing anything they could do with much effort' (p.187). Indeed, all of the neural findings from these recent studies show that not only is the obstructive hallucination the most effective (while showing consistent ERPs that are reduced in response to pain) but that for high hypnotizables in the hypnotic condition, less (not more) processing effort is required. These findings were further confirmed by De Pascalis *et al.* (2001) and are consistent with studies comparing hypnosis and distraction for severely ill children undergoing painful medical procedures (Smith *et al.*, 1996), and experimentally induced cold-pressor pain showing significant differences between hypnosis and distraction (Freeman *et al.*, 2000). A key feature of genuine hypnotic responding is the effortlessness by which the subject responds to the hypnotic suggestions. In contrast, those subjects responding only by adopting a social role in response to suggestion respond to the extent they can by exerting great effort.

Ray and De Pascalis (2003) recognized that the pain induced in these experiments was a type of phasic pain, which is different from clinical pain (Smith *et al.*, 1996). Clinical pain is often continuous and recurrent, and a type of

pain with features similar to clinical pain can be induced by the cold-presser test (Freeman *et al.*, 2000). De Pascalis *et al.* (2002), therefore, designed their next experiment to evaluate changes in brain responses in autonomic activities during cognitive-attentional modulation of cold-presser pain in nonhypnotic and hypnotic conditions. They used the pain reduction strategies identical to those in the previous studies involving dissociation and focused analgesia. The strategies resulted in pain relief although this occurred via different attentional demands. Dissociated imagery required the subject to divert attention (divided attention) whereas focused analgesia required the subject to focus on the hand receiving the painful stimulation. Using an elegant oddball paradigm (in which 'repeated series of identical stimuli are occasionally interspersed with a deviant stimulus' and then 'response to the 'target' stimulus is com-

pared with that to the 'standard' stimulus; Rippon, 2006, p. 248), they also tested the hypothesis of the inhibitory mechanism responsible for hypnotic analgesia (see Figure 13.1).

The design of the De Pascalis *et al.* (2002) study was also sensitive to the possibility that defining a waking treatment as hypnotic may activate a person's hypnotic capacity even in the absence of hypnotic induction (Weitzenhoffer *et al.*, 1959; Rotmar and Bowers, 1982; Spanos and de Groh, 1984) thus accounting for spontaneous hypnosis. Of course, such an occurrence of hypnotic responding in the absence of a hypnotic induction is not surprising. In many cases, they are likely to be simple examples of spontaneous hypnosis, which can and do occur as a part of everyday life for hypnotizable individuals, whether or not they are in a hypnotic context (studies relating to spontaneous hypnosis are too numerous to mention here, see Barabasz

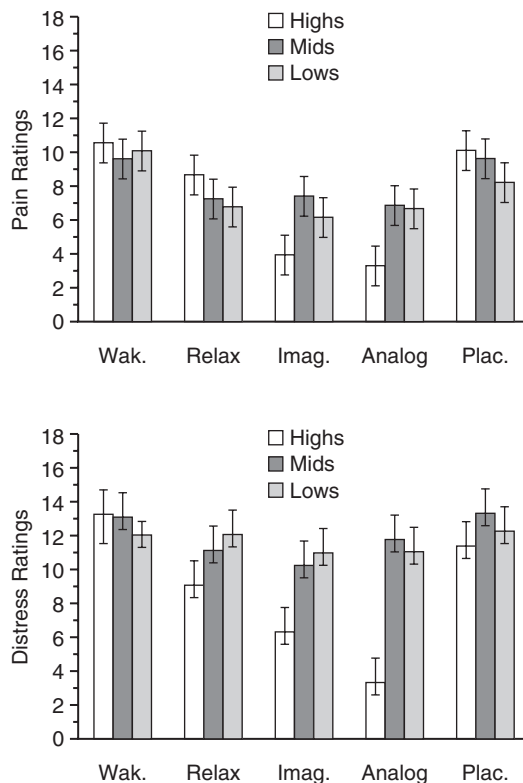


Fig. 13.1 Mean sensory pain (top panel) and distress ratings (bottom panel) with standard errors during electrical stimulation by hypnosis group and condition. From Ray and De Pascalis (2003, p. 154). Reproduced with permission of the *International Journal of Clinical and Experimental Hypnosis*.

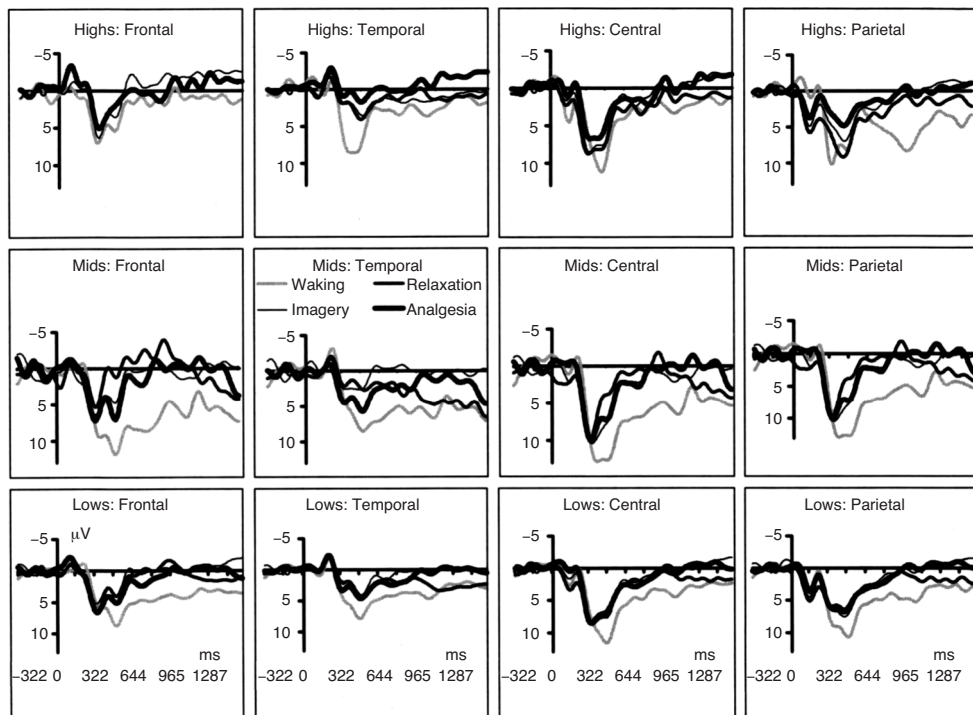


Fig. 13.2 Somatosensory event-related potentials to painful target stimuli averaged across left and right hemispheres of frontal, temporal, central and parietal sites during waking, and hypnotic analgesia suggestions. From Ray and De Pascalis (2003, p. 155). Reproduced with permission of the *International Journal of Clinical and Experimental Hypnosis*.

2005/2006 for a review). Furthermore, and perhaps most importantly, Nash (2005) reminds us that a hypnotic induction need not be anything more or less than the first suggestion after an induction. De Pascalis wondered whether or not effects wrought by the hypnotic context, such as an initial suggestion prior to the formal induction could evoke brain responses in the same manner as hypnosis *per se*. The investigation defined a treatment context in a waking state as hypnotic. If Spanos and his colleagues (Spanos and de Groh, 1984) were correct, the hypnotic context that would otherwise be considered a nonhypnotic treatment should yield the same responses as the actual hypnotic treatment in terms of pain reduction, brain responses, etc.

The elegantly designed De Pascalis *et al.* (2002; see also Ray and De Pascalis, 2003) study employed a form of the cold-pressor test as the painful stimulus. Reaction times, skin conductance responses and EEG ERPs to a secondary auditory oddball task were obtained with strin-

gently selected high, medium and low hypnotizables. A nonanalgesia condition served as a control. Subjects received suggestions of dissociated imagery and focused analgesia during both waking/hypnotic context and hypnosis conditions. The findings showed convincingly that the waking/hypnotic context condition required greater cognitive effort to generate a mental strategy of coping with pain. In contrast, in the hypnosis condition, both the high and medium hypnotizables displayed longer reaction times during dissociated imagery and shorter reaction times during focused analgesia as compared with the no analgesia treatment (see Figure 13.2). The effect was most pronounced for the highs. The reduced effort released more processing capacity that was available for the auditory task and is precisely what Bowers's (1990, 1994; see also Woody and Sadler, Chapter 4, this volume) dissociated control state theory of hypnosis predicts. Pain is effectively reduced by dissociation and thus more high-level

cognitive resources are available for information processing.

Furthermore, the EEG P300 findings showed that the ERPs for highs in the waking/hypnotic context conditions were different from those obtained with the same conditions in hypnosis. Thus, once again, there were data showing that there was more available processing capacity and/or less effortful reactivity for the secondary task during the hypnosis condition than during the waking condition. These data are also consistent with the ERP findings from our own laboratory (Barabasz, 2000) showing EEG P300 responses to be clearly differentiable as more attenuated (effortless) responses to an auditory blocking hallucination compared with responses by the same subjects in the nonhypnotic suggestion-only condition. The interesting assumption of Spanos (1982; Spanos and de Groh, 1984) about the equivalence of hypnotic and nonhypnotic conditions was, therefore, disproved by this work. The theoretical ramifications of De Pascalis's research are a significant advance in the field, which should serve to move our theoretical thinking about hypnosis and Bowers's theory forward.

Next, Ray *et al.* (2002) focused on the role of temporal factors in hypnotic analgesia examining spatial components of the EEG during hypnotic analgesia. Participants were stringently selected for high and low hypnotizability. Painful electrical stimulation was presented to either the left or right finger under two different hypnotic suggestion conditions. One used a dissociative procedure (hypoanalgesia) and the other used a sensitizing hyperanalgesia suggestion. This remarkable study obtained data from a 129-electrode dense array EEG. Factor-analytic procedures were used to clarify the topography of the ERPs. This standardized procedure determines the spatiotemporal structure of this signal. Then, a principle components analysis (PCA) determined the spatial patterns in the data. A second PCA was performed to describe the temporal patterns. Grand mean ERPs including all electrodes were also calculated.

Participants' self-reported pain experiences in the nonhypnotic condition showed that both the high and low hypnotizables responded to the electrical stimulation and reported pain in similar ways. Thus, as is a common feature of this group of studies (Barabasz and Watkins,

2005), there was no apparent 'holding back' of reporting for the highs as hypothesized by Zamansky *et al.* (1964). As Ray *et al.* (2002) pointed out, this provides the advantage that any differential responding to the painful stimuli in the hypnotic suggestion conditions can be inferred to be the result of exposure to hypnosis.

The 129-electrode dense array EEG procedure provided far greater precision and specificity than found in the ERP studies of just a few years earlier. The overall pain-related evoked potential emerged as the most striking feature in the form of the reduction of amplitude in the P250 component during the hypnosis condition for the high hypnotizables and the increase in amplitude for the lows as compared with the baseline. This is also true for the spatial factor, showing a high loading at the central sites. The low hypnotizables showed an increase in power for both the hypo- and hyper-analgesia conditions, whereas the highs displayed a significant decrease in power, with the dissociation condition showing the greatest decrease. Ray's findings, generated from what is probably the most sophisticated EEG ERP hypnosis experiment to date, underscores the robustness of hypnotically produced brain effects. The results are consistent with the data from Spiegel's laboratory at Stanford, De Pascalis's laboratory at the University of Rome and our own laboratory at Washington State University.

The study of Ray *et al.* (2002) also revealed that the early N140 component showed fewer and less specific changes during the hypnotic conditions. The researchers noted that this finding is consistent with pain research showing that these components are more stimulus oriented. Once again, there is further evidence that participants perceive the stimulus (feel something) before they can attenuate their response to it. The attenuation shown in the later ERP components, as in all of the modern controlled studies, indicates that for those capable of experiencing the hypnotic state, a processing of the received signal had occurred.

13.4. Research since the Tennessee Conference on Brain Imaging and Hypnosis

Farvoldon and Woody (2004) attempted to examine the role of frontal executive functioning

by comparing the performance of participants with high and low hypnotizability on a variety of memory tasks sensitive to frontal lobe functioning and on control memory tasks not considered to be sensitive to such functioning. In contrast to many theories of hypnotic responding, they noted that the dissociated control theory of hypnosis (Woody and Bowers, 1994; see also Woody and Sadler, Chapter 4, this volume) explains that hypnosis alters the actual underlying control of behavior and not just attributions about such control. The conceptualization is that hypnosis results in a weakening of the executive level of cognitive control responsible for the initiation and monitoring of behavior. They explain that unsuspected effects of hypnosis on memory resemble frontal amnesia (see Woody and Sadler, Chapter 4, this volume).

Subjects were stringently selected for high and low hypnotizability using the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor and Orne, 1962) and Waterloo Group Scale of Hypnotic Susceptibility (WSGC; Bowers 1993, 1998). All highly hypnotizable subjects had passed the amnesia item on both of the scales. Subjects were recruited for either a hypnosis and memory study (hypnosis context condition) or a memory and individual differences study (nonhypnotic context condition). Seven lengthy tests, involving as many as five learning trials in a single test, were conducted, including free recall, proactive interference, word fluency, word sequencing, source amnesia (involving 30 difficult general information questions), cognitive estimation and metamemory (involving 36 sentence presentations per participant). Across two sessions, all participants completed the test battery in one of four possible counterbalanced orders. Because of the nature of the source amnesia task and the metamemory task, source amnesia was presented first and last in the first session, and metamemory first and last in the second session. Those in the nonhypnotic condition were masked with regard to the relevance of their hypnotic ability until the end of the second and final session, while those in the hypnosis condition received a standard hypnotic induction at the beginning of each session.

The high hypnotizables consistently performed less well on frontal memory tasks in contrast to

the low hypnotizables. This small, but statistically significant difference suggested a subtle relationship between hypnotizability and frontal lobe function. Most salient was the finding that the highs performed poorly on free recall, proactive interference and source amnesia tasks. Consistent with their hypothesis, the highs performed just as well as the lows on memory tasks that were not associated with impaired frontal lobe functioning.

At a superficial level, the lack of difference between the hypnotic context and nonhypnotic context conditions would appear to ‘clash with a strong state position about the nature of hypnosis’ (Farvolden and Woody, 2004, p. 19; see also Woody and Sadler, Chapter 4, this volume). Thus, their finding appears consistent with the conceptual argument of Kirsch (1997) that a hypnotic induction may not be necessary for revealing differences due to hypnotizability. However, as the authors pointed out, asking hypnotized participants to complete extensive batteries of demanding cognitive tasks, such as the memory tasks involved, may simply be incompatible with maintaining a state of hypnosis. They noted that in order to perform this battery of complex cognitive tasks, participants may have ‘alerted themselves from hypnosis’ (p. 19). Barabasz and Watkins (2005, p. 90) explained that sufficient hypnotic depth is required to achieve a response to a demanding suggestion and that hypnotic depth varies even in the midst of an ongoing hypnotic intervention (Hilgard and Tart, 1966). Future research might evaluate hypnotic depth at different points in task presentation using the dial method developed by McConkey *et al.* (1999; see also McConkey, Chapter 3, this volume). Farvolden and Woody established that all of the high hypnotizables could pass the amnesia test, but they did not consider depth or spontaneous hypnotic responding.

They explained that it may be that specific features of frontal lobe functioning constitute a baseline characteristic of people with or without hypnotic capacity rather than one that is essential to the determination of the hypnotic state. The lack of assurance of the maintenance of the hypnotic condition or the potential for spontaneous hypnosis are perhaps the only concerns that can be raised about this otherwise well designed and executed study.

Those who participated in the experiment outside of the context of hypnosis remained unaware of the relevance of their hypnotizability until the very end of the second and final session. If the high hypnotizables were responding to the demands of the situation in the context of hypnosis, the pattern of poor performance on all memory tasks would have resulted. Contrarily, both high and low hypnotizables did not differ in their performance on the various nonfrontal memory tasks that served as cross-checks. Thus, the findings of the Farvoldon and Woody study on differential frontal lobe function responses cannot be explained by expectancy (Kirsch, 1997) or general socio-cognitive (Spanos, 1986) conceptualizations (for more on social cognitive views, see Lynn *et al.*, Chapter 5, this volume).

Horton *et al.* (2004) used fMRI to investigate differences in brain morphology between high and low hypnotizables. The anterior corpus colosum bridges prefrontal cortices to facilitate the kinds of cognitive flexibility and executive controls that play key roles in the abilities of high hypnotizables. Nash (2005) recognized this extraordinary research as a 'potentially ground breaking study on the neuroscience of hypnotizability' (p. 88). E. R. Hilgard's (1979, 1992) review of two decades of Stanford University hypnosis laboratory findings documented that high hypnotizables in contrast to lows have remarkable perceptual and sensory gating abilities. He hypothesized that such gating talents make it possible for them to dissociate memories, cognitions and highly painful stimuli. As reviewed and discussed in this chapter, highs' but not lows' brain responses specific to the hypnotic state show us how this exceptional gating occurs in hypnosis whether specifically evoked as in the studies reviewed or spontaneously. Horton *et al.* (2004) screened hundreds of students to produce high and low hypnotizable groups. They found that highs had larger rostrums in the anterior corpus colosum. Given the role of the anterior corpus colosum in cognitive flexibility and executive control, these larger rostrums may contribute towards the exceptional gating abilities of high hypnotizables.

Jamieson and Sheehan (2004) tested Woody and Bowers's (1994) dissociated-control theory of hypnosis using Stroop (1935) behavioral

performance to measure aspects of anterior-mediated supervisory attentional function. In this task, participants are shown color names presented in color. When the actual color is incongruent with the color word, task speed is impaired. The task creates response conflicts in which a pre-potent response to a 'highly salient attribute' (the color word name) must be suppressed to allow response to another instructed stimulus attribute, such as the actual color. Several studies using fMRI show that regions of both the ACC and the left dorsolateral prefrontal cortex are consistently activated when the task demands resolution of conflicting responses. The socio-cognitivists, Kirsch and Lynn (1998) proposed that it was particularly appropriate to test dissociated-control theory utilizing the Stroop paradigm. Jamieson and Sheehan noted that Kirsch and Lynn specifically predict that, on the basis of dissociated-control theory, hypnotized persons should show impaired performance on the Stroop color-naming task.

Sixty-six high hypnotizables obtained a score of nine or higher on both the HGSHS:A (Shor and Orne, 1962) and the individually administered SHSS:C (Weitzenhoffer and Hilgard, 1962). Sixty-six low hypnotizables scored three or lower on each scale. Color name and reaction times were obtained to measure suppression of attention, using standardized procedures (Stuss *et al.*, 1995). Half of the participants performed the Stroop task first in the nonhypnotized condition and then immediately repeated the task in the hypnotized condition. The other half did it first in hypnosis and then after a brief break in the nonhypnotized condition, using a systematic counterbalancing of testing order across all experimental groups (high versus low \times task instructions). There was no significant difference between high and low hypnotizables in the nonhypnotized condition. Only in the hypnotized condition were color-naming reaction times significantly greater than in the nonhypnotized condition for subjects who were high in hypnotizability. It was only the high hypnotizables that showed that efficiency in suppressing attention declines significantly during hypnosis.

Interestingly, the decline in cognitive task performance was paralleled by a change in the subjective quality of awareness which the authors

recognized as consistent with Tellegen's (1981) description of the experiential set. There was a significant interaction for experiential set between hypnosis and hypnotizability. Apparently, the experiential set occurred in the hypnotized condition for the high hypnotizables. Therefore, experiential set is not a spontaneous preference of either highs or lows when performing the task in the nonhypnotized condition, but emerges only among the highs in hypnosis as part of their response to the hypnotic condition. The authors interpreted the results as hypnosis inducing diminished supervisory attentional control. They concluded that the difficulty level of the Stroop paradigm combined with the power of the study itself were keys in obtaining a significant hypnosis by hypnotizability interaction effect for total Stroop errors. Furthermore, the difference in reaction times between high and low response conflict trials did not diminish in hypnosis, whereas overall reaction time did. The study showed that the actual process of response selection may not have changed in hypnosis, but that the efficiency of the control of that process was significantly affected. Jamieson and Sheehan suggested a specific modification of the dissociated-control theory, noting that during hypnosis, the control functions of the dorsolateral prefrontal cortex become functionally dissociated from the monitoring feedback of the ACC, as well as from the processes over which normal control is exerted (for a discussion of this perspective, see Woody and Sadler, Chapter 4, this volume).

13.5. Summary and discussion

Ray and Oathes's (2003) primer on physiological measures highlighted a number of representative studies and elucidated a variety of brain imaging technologies available to the researcher interested in studying the hypnotic experience, either directly or as a method for modulating processes, such as pain. EEG ERP procedures produced the greatest number of studies in the latter part of the last century. All of the findings clearly and consistently indicated a neural basis for the hypnotic state. Furthermore, it was now established that hypnosis effects go beyond those which can be wrought by social influence without hypnosis. The first group of PET studies provided further support for the most recent

generation of ERP studies and allowed us to begin to understand the brain structures involved in the hypnotic experience. Ray and Oathes noted that the newer methodologies, such as MEG and fMRI, were yet to be used in hypnosis research. MEG uses a superconducting quantum interface device (Squid) to detect small magnetic field gradients exiting and entering the surface of the head which are produced when neurons are active. Additionally, fMRI could shed even further light on specific areas active in the cortex during the evocation of the hypnotic state.

Rainville and Price (2003) elucidated how the induction of hypnosis produces changes in activity within the brain's arousal and attention systems. The conceptualization of hypnosis as an altered state of consciousness implies that basic aspects of consciousness regulation are modified by hypnosis. The results of their experimental studies can be clearly interpreted in light of recent theories of consciousness. Rainville and Price showed that several dimensions of experience characterizing the background of consciousness are modified by standard hypnotic procedures. Such experiential dimensions include absorption, mental ease and the 'altered sense of self characterized by changes in orientation and self-agency' (Rainville and Price, 2003, p. 123). These changes are identical to those E. R. Hilgard (1979, 1992) used to describe responses characteristic of the hypnotic state. The changes in relaxation, mental ease and absorption are associated with changes in brain activity consistent with the involvement of brain structures and mechanisms involved in the basic aspects of the regulation of consciousness. Rainville and Price's findings are consistent with a conceptualization of hypnosis as a unique combination of significant changes in basic aspects of conscious experience and in neural activity within specific networks of brain structures involved in the body-self representation and in the regulation of consciousness.

Spiegel (2003) reviewed recent research and found consistent evidence showing that hypnotic perceptual alteration clearly affects brain function in consistent and reliable ways. We now know that the nature of the specific hypnotic instruction can be crucial and that positive hallucinations induced by hypnosis have the opposite effect of negative ones, over-riding attention

to external stimuli as opposed to competing with them. Positive hallucination instructions have the effect of reducing perception by creating an illusory obstruction to it. This reduces the brain's response to perception in the cognate sensory cortex, as consistently reflected in measures of ERP amplitude and in rCBF. The evidence, thus far, is particularly strong for the effect in the visual system, as shown by Spiegel's PET scan study. In the hypnotic state, 'believing is seeing'. The hypnotic instructions that affect the participant's reaction to the perception apparently activate the anterior attentional system, especially the ACC, as measured by rCBF. The evidence indicates that hypnotic perceptual alteration changes the requisite sensory cortex in addition to altering the function of attentional systems. The nature of the hypnotic instructions clearly shifts the balance. Direct sensory alteration instructions that are not subject to derailing from partial response apparently alter response in the sensory association cortices. Whereas instructions to alter responses to stimuli trigger changes in the anterior attentional system, hypnosis apparently involves activation without arousal and may be specifically mediated via dopaminergic pathways. This emphasizes that hypnotic alteration of perception is clearly accompanied by measurable changes in both perceptual and attentional function of the specific regions of the brain that process those activities. The balance between the two is modulated, in part, by the specific hypnotic instruction used. The focus becomes inward. Specifically, positive obstructive hallucinations, induced via hypnosis, allow for a hypnotic focus inward, thus activating attentional neural systems while simultaneously reducing perceptual ones.

Ray and De Pascalis (2003) showed that reductions in the activation of the ACC reliably occur when there is reduced perception of painful stimulation while the primary somato-sensory cortex remains unaltered by hypnosis. Ray and De Pascalis noted, 'Overall, it is now apparent from a variety of studies that hypnotic suggestions of analgesia modulate both self-reports of painful experiences and physiological responses' (p. 151; also see De Pascalis, 2002). Such neurophysiological data shed light on the mechanism of action underlying the decades-long well-documented findings related to hypnotic modulation of pain

(see Barabasz, and Watkins, 2005, pp. 219–288). Ray and De Pascalis (2003) also described the EEG research from their laboratories and others investigating attention, dissociation, timing and the implications for conceptualizations of hypnosis.

Given that reliable neurophysiological markers of hypnotic responding had been established that could not be produced by nonhypnotic control conditions, De Pascalis (1999) moved to his next level of research by studying the effects of alternative hypnotic analgesia suggestions on pain reduction and the concurrent changes that might be wrought on both cognitive and physiological responses. This important work extended that of Zachariae and Bjerring's (1994) test of the hypothesis that hypnotic analgesia can be identified by a single brain phenomenon. Ray and De Pascalis (2003) added sophisticated EEG findings supporting what is now a large body of research explaining the neurological bases of the hypnotic state that differentiates responses wrought by hypnosis from those that can be wrought by social influence or hypnotic contexts alone. The induction of hypnosis yields a difference at the neurological level as opposed to administering identical suggestions without an induction. De Pascalis *et al.* (2002) showed that high hypnotizables produced P300 ERPs in hypnosis that are significantly different from those that can be wrought in a waking/hypnotic context condition, thus again refuting Spanos's (1982; Spanos and de Groh, 1984) nonstate conceptualization. Ray and De Pascalis (2003) also added to our knowledge of the nature of hypnotic responding by showing that hypnotic procedures do not influence EEG responses that are more sensory (Bjick and Ray, 2002).

As a result of the authors' elegant designs and sophisticated EEG measures, we now have physiological data supporting Bowers's (1994) dissociated control conceptualization of the hypnotic state (see also Woody and Sadler, Chapter 4, this volume). Apparently the later ERP components carry with them rich cognitive/emotional information that is apparently the locus of hypnotic influence. It may be that hypnosis disrupts a form of emotional binding in which cognitive/emotional evaluative information is added to sensory processing. Consistent with Spiegel (for a review, see Spiegel, 2003; see also Spiegel,

Chapter 7, this volume), it seems abundantly clear that a common stable finding among the experimentally controlled neurological studies of hypnotic responding is that the attentional demand required by hypnotic suggestions plays a critical role in evoking the suggested effect during the hypnotic state. The dissociative instructions require focused attention mechanisms to produce obstructive hallucinations. These are accompanied by measurable functional changes in those specific regions of the brain that activate the functioning of cognitive-attentional neural systems and reduce the perceptual-emotional ones. This supports Spiegel's (2003) review showing that the instructions during hypnosis can be critical, where seemingly small wording changes can produce opposite effects (see also Spiegel, Chapter 7, this volume).

Hypnotic suggestion requiring mental imagery and divided-attention mechanisms to reduce pain perception are accompanied by pronounced cognitive effort for pain reduction that is reflected in a less pronounced attenuation of activity in the cognitive-emotional systems. Apparently, the experience of absorption is associated with increased activation of the thalamus, ponto-mesencephalic brainstem and the rostral ACC. Feelings of mere relaxation are associated with lower levels of activity in these brain regions (see Rainville *et al.*, 1999; Rainville, 2003). Consistent with the other modern studies, the research reviewed by Ray and De Pascalis (2003) indicates that an inhibitory process associated with hypnotic analgesia only occurs for those capable of entering the hypnotic state. These findings converge with other studies involving ERPs associated with obstructive hallucinations for auditory, olfactory and visual hallucinations from the laboratories of Barabasz, De Pascalis and Spiegel. Structurally, several studies show that the influence of cortical feedback on receptive field organization in areas such as the thalamus can be dramatically influenced by a higher order of brain processes. Apparently, similar processes are involved in the hypnotic modulation of sensory experiences.

In conclusion, let us underscore that the focus of contemporary research on responses of the brain to hypnosis is no longer an attempt to uncover some simplistic unidimensional brain 'signature' of the hypnotic state.

When experiencing a hypnotic state, no light bulb, of sorts, flashes on the participant's forehead. Just as the last century revealed that participants' responses to standardized tests of hypnotizability are factorially complex (Woody and Barnier, Chapter 10, this volume), we now know that a person's neurophysiological responses are also complex. The research clearly shows that rather than a simple matter of 'either hypnotized or not', reliable physiological indicators reflect the various subjective states perceived by the participant while shedding light on the underlying mechanisms of response to hypnosis (Barabasz and Watkins, 2005, p. 89).

Clinicians as well as most researchers trained to use hypnosis know that people vary in their level of hypnotizability. Some individuals can enter a deep state and exhibit unusual behaviors, such as regression, time distortion and hallucinations, while others seem to reach a plateau where they will carry out only simple responses to suggestions, but not the more difficult or unusual ones which involve major distortions of perception. Others might become more relaxed or slightly more alert with minimal hypnotic involvement. Experienced hypnosis practitioners recognize that even those capable of deep hypnotic states do not always achieve the depth they are capable of. Therefore, it is essential for hypnosis researchers to evaluate the depth of trance at the time a hypnotic suggestion is presented to determine if it is sufficient. Some physiological responses to hypnosis require deep states while others can be effectively employed with the participant only lightly hypnotized (Barabasz and Watkins, 2005, p. 90). It is the naïve researcher who hypothesizes a physiological response to a difficult hallucinatory test item, requiring significant hypnotic depth, who then conducts an experiment that makes no sincere effort to assure that the subjects selected have the ability to experience the test item (e.g. anosmia to an odor) or to assure sufficient hypnotic depth at the time the response is called for. The data overwhelmingly show us that hypnosis has neurophysiological features and mechanisms which cannot be brought about by mere suggestion or social influence, yet much is still to be learned. Our findings are not entirely complete.

We still seem to lack an explanation of the hypnotic state that is satisfactory to all serious

workers in the field (Barabasz and Watkins, 2005, pp. 55–56). Only part of the definition (Killeen and Nash, 2003) developed by the Tennessee Conference on Brain Imaging and Hypnosis was adopted by Division 30 of the American Psychological Association in 2003. However, contrary to the beliefs of few, this apparent shortcoming does not deny the existence of the phenomenon. Consider the fact that we still lack an adequate definition of personality, despite decades of wrestling with the concept. Knowledge and research on sleep and dreams was enhanced by the discovery of rapid eye movement sleep and EEG stages of sleep, but we did not deny the reality of nocturnal sleep or dreams prior to these advances. Until the recent breakthroughs and discoveries relating to the neurophysiological markers of the hypnotic state, the study of hypnosis was very much the same as the study of sleep years earlier. So, why should there still be a demand for a precise explanation of the trance phenomenon and such a quest for absolute certainty about what we are studying?

Barabasz and Watkins (2005) explained that the expectation for complete information is one that leaves one immobilized by indecision. In one Star Trek episode, Captain Kirk, for whatever reason, loses his communicator, thus leaving him stranded on a strange planet and unable to return to the Starship Enterprise. The Enterprise then comes under attack from, of course, Klingons. Spock takes command. Spock obtains information on a location of the enemy with great precision but is unable to act because the data are incomplete. Time to act has nearly run out. Captain Kirk then returns and, as usual, saves the day because he can act without the absolutistic insistence on complete information. The episode's writer misunderstood both Spock and rationality. Certainly Spock, as a supremely rational being, would not have been immobilized but would have taken the course of action that would have had the highest probability of benefit to the Enterprise and crew based upon the information available. If absolute certainty was essential to make a decision (draw a conclusion, support a hypothesis, develop a treatment plan), few decisions could ever be made by rational beings. As is the case with most decisions, one must select a theoretical position

explaining hypnosis from the theoretical positions available at the time. The decision is based on incomplete information without absolute certainty. Assumptions about hypnosis as being nothing more than a placebo borne from a mundane social construction helped researchers better their methodologies for decades but, as Spiegel (2005) pointed out, 'It is one thing to make a set of assumptions, as mathematicians do, and see what you can learn from sticking to them. It is another to treat these assumptions [in the present case relating to less than ideally complete information] as facts' (see also, Barabasz, 2005/2006).

The neurophysiological data extant are undeniably mountainous. It is no longer defensible to conceptualize hypnosis only on the basis of socio-psychological notions. It is perhaps time to consider the 'debate' of the last century resolved (Barabasz, 2005/2006) and move on as recommended by Spiegel (2005) to the recognition that 'multi-level explanations are an absolute necessity in understanding human mind/brain/body phenomena because we are both neurally-based and social creatures who experience the world in mental-phenomenal terms.' (p. 32).

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CHAPTER 14

Hypnosis, trance and suggestion: evidence from neuroimaging

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14.1. Introduction

The studies I review in this chapter have all involved one or other of two recently developed brain scanning techniques for detecting and displaying images of changes in regional cerebral blood flow (rCBF) via either positron emission tomography (PET) or, more recently, functional magnetic resonance imagery (fMRI; Ray and Oathes, 2003). The variations in rCBF detected in these neuroimaging techniques are known to correlate with changes in brain metabolism, which in turn are related to local neuronal activity. Consequently they provide us with a means of identifying which brain areas are active during the execution of any given task or mental activity. This is particularly helpful in hypnosis research where the phenomena of interest consist predominantly of changes in sensory and perceptual experience, alterations in the sense of agency in the execution of motor tasks, changes in the ability to gain voluntary access to cognitive processes such as memory or, more generally, in altered states of awareness—all of which depend for their detection on the subjective reports of the individuals experiencing them. PET and fMRI offer the opportunity to provide an objective means of validating these subjective

reports and also to explore the brain processes that underlie hypnosis and of the hypnotic phenomena in question. In addition, the combination of hypnosis and neuroimaging in research is already adding significantly to our understanding and treatment of a variety of clinical conditions. I refer to some of these applications where appropriate in the sections that follow.

14.2. Core concepts and definitions

While these neuroimaging techniques offer clear opportunities for integrating data across behavioral, experiential and neural domains, they also present some potential problems for hypnosis research. The increasing use of both of them, but of fMRI in particular, often involves very lengthy periods of time in confined environments accompanied by physical restraint, noise and other distractions that might be expected to interfere with hypnotic procedures. Practical experience, however, has begun to indicate that such concerns are unfounded, and a recent direct comparison of hypnosis in standard experimental conditions and the fMRI environment found no significant difference between the two

in terms of hypnotic depth or in responsiveness to specific suggestions (Oakley *et al.*, 2007).

PET and fMRI are also very expensive procedures to use and are typically carried out by interdisciplinary teams of researchers. One consequence of this is that it has been easier to introduce hypnosis into neuroimaging studies as an aid to understanding broader issues rather than as a means of investigating hypnosis *per se*. That is, hypnosis has been used ‘instrumentally’ rather than ‘intrinsically’ as part of the research goal (Reyher, 1962; Barnier and McConkey, 2003). In ‘instrumental’ hypnosis research the hypnotic technique is deployed as a tool with which to explore other phenomena of interest, such as pain, auditory hallucination or voluntary control of action (see Oakley, 2006), in which case the underlying mental processes and the candidate brain areas are usually relatively easy to specify. In the simplest instrumental designs the experimental condition and the control condition are carried out in hypnosis—effectively eliminating any effect of hypnosis *per se* from the comparison and leaving only the difference attributable to the change in the target process brought about by specific suggestion.

In ‘intrinsic’ hypnosis research, however, where the nature of ‘hypnosis’ itself or the mechanism of its effects is the primary focus of interest, design issues are more complex and the picture is consequently less clear. A major difficulty arises in defining the target condition of ‘hypnosis’. The question of what is meant by ‘hypnosis’ and the existence of a hypnotic ‘state’—or even if it is helpful to use the term as an explanatory concept—has been debated within the hypnosis community for many years and has been addressed by Kihlstrom (in Chapter 2, this volume) and by Barabasz and Barabasz (in Chapter 13, this volume). I will not engage in that debate here, but it will be helpful for the purposes of this review to identify two approaches that have been adopted in the neuroimaging literature. One is to treat ‘hypnosis’ as the combination of a hypnotic induction procedure with a targeted suggestion. The other has been to consider the effects of a hypnotic induction separately from the effects of specific suggestions; i.e. to explore what has been called ‘neutral hypnosis’ or ‘anesis’ (e.g. Edmonston, 1991). Irrespective of which of these definitions is adopted, in intrinsic hypnosis research the

experimental design must either include comparisons of the ‘hypnotic’ condition and the ‘nonhypnotic’ condition (conventionally and somewhat arbitrarily labeled the ‘normal’ or ‘alert’ state) or employ systematic variations in subjective depth of hypnosis (for more on intrinsic versus instrumental research, see Cox and Bryant, Chapter 12, this volume).

For the purposes of exposition in what follows, I retain the historical distinction between an assumed hypnotic ‘state’, or ‘trance’, typically produced by an induction procedure, and the effects of suggestion (Hull and Huse, 1930; Bowers, 1976; Spiegel and Spiegel, 1978; Fellows, 1986; Gruzelier, 2000; Kallio and Revonsuo, 2003). One way of viewing this is to consider that hypnosis induction procedures serve to alter what Chalmers (2002) has identified as the background state of consciousness in contrast to content-specific states of consciousness (Rainville and Price, 2003, 2004). The latter may be more readily related to suggestions targeted at particular perceptual or motor control changes. If this distinction is accepted as a working model, there is also the question of the relationship between ‘trance’ and ‘suggestion’. It is clear that typically ‘hypnotic’ phenomena can be produced by suggestion without the need for a hypnotic induction procedure (Braffman and Kirsch, 1999) and that these show attributes of the classical suggestion effect such as a sense of involuntariness (Gandhi and Oakley, 2005). This has led some researchers to question whether the mechanisms underlying suggested effects in hypnosis are any different from those produced outside hypnosis especially as the best predictor of hypnotic suggestibility appears to be nonhypnotic, or ‘imaginative’, suggestibility (Kirsch and Braffman, 1999; see also Lynn *et al.*, Chapter 5; but see Laurence *et al.*, Chapter 9; Tasso and Perez, Chapter 11, this volume). There is good evidence, however, that a hypnotic induction procedure can enhance subsequent responsiveness to suggestion, especially if the procedure is labeled ‘hypnosis’ (Gandhi and Oakley, 2005). It may be that the label ‘hypnosis’ acts as a meta-suggestion in that it serves to suggest that an individual’s existing responsiveness to suggestions will show a quantitative increase following procedures to which the label is attached. Alternatively, it may be that the

hypnotic induction procedure, with or without the label 'hypnosis', subtly alters the mechanisms by which suggested effects are brought about. The core question of whether the effect of giving a suggestion in hypnosis is the same as giving exactly the same suggestion outside hypnosis is as important for clinical and therapeutic applications of hypnosis as it is for hypnosis theory (see Benham and Younger, Chapter 15, this volume) and is one of the important issues that can be resolved empirically by neuroimaging studies.

Overall, on the basis of the evidence to date, the view adopted here is that the hypnotic induction procedure in some way facilitates a change in mental state that is interesting in its own right and may influence either quantitatively or qualitatively a pre-existing form of suggestibility. If this is accepted as a working hypothesis, it is important to identify the attributes of that state. Price and Barrell (1990) and Rainville and Price (2003, 2004) have proposed from experiential data the following as candidates for components of hypnotic states produced by standard induction procedures: focused attention, followed by absorption, relaxation, a sense of automaticity and altered experiences of self-agency. It is important to keep in mind that different types of hypnotic induction procedures, for example traditional relaxation inductions or active-alert inductions (Banyai and Hilgard, 1976; Wark, 2006), may influence the characteristics of the 'state' that is produced. A crucial question is whether all 'hypnotic' states include some core features and, if so, what these are.

A further issue that has concerned both clinicians and researchers is the relationship between hypnotic responding and imaginal activity (e.g. Kunzendorf *et al.*, 1996). A particular distinction that will be important in later discussion is that between 'real' events, suggested events and imagined events. To take an example from the Harvard Group Scale of Hypnotic Susceptibility: Form A (HGSHS:A; Shor and Orne, 1962), an item involving the hypnotic experience of a fly buzzing annoyingly around the participant's head begins: 'I am sure you have paid so close attention to what we have been doing that you have not noticed the fly which has been buzzing around you... but now that I call your attention to it you become

increasingly aware of this fly... etc.' This might be set up as an imagined event by giving instructions along the lines of: 'Imagine a fly buzzing around you and as you do so fix the image increasingly strongly in your mind ...'. The effects of both of these in experiential terms and in terms of brain activity can be compared with each other and with a condition in which a real fly is present and the participant's attention is drawn to it. For this to be a valid comparison, it is important that all three conditions are carried out in the same background state—in this case either the hypnotized or the nonhypnotized state. It would clearly not make good sense in experimental design terms to compare, for example, a suggested experience in hypnosis with a control condition involving an imagined event in the nonhypnotized condition, as this would confound the effects of 'hypnosis' on the one hand and suggestion versus imaginative instructions on the other (for more on hypnotic designs, see Cox and Bryant, Chapter 12, this volume). Evidence that I present later in this chapter indicates that when all three conditions have been compared in the hypnosis condition, brain activity associated with the real event and the suggested event is similar and both are different from that associated with an imagined event for hearing spoken words (Szechtman *et al.*, 1998) and for the experience of pain (Derbyshire *et al.*, 2004).

A final point to raise that is relevant to both instrumental and intrinsic hypnosis research is that the cost of neuroimaging has meant that, in contrast to behavioral research, brain scanning studies typically involve only participants who have been shown to be of high hypnotic suggestibility as measured by standard scales such as the HGSHS:A and have been extensively screened for their ability to produce the desired hypnotic effect reliably prior to scanning. This may limit the generalization of conclusions that can be drawn, and in the case of intrinsic research has limited the potential use of low hypnotizables as controls.

Since work in this area is all relatively new, the main organizing theme for what follows centres on instrumental versus intrinsic research approaches, rather than the foundation research/current research dichotomy adopted in other chapters in this volume.

14.3. 'Instrumental' hypnosis research

The studies reviewed in this section have employed specific suggestions delivered after a hypnotic induction as a tool for investigating pain; volition and motor control; the Stroop effect; and auditory hallucinations.

14.3.1. Pain

By far the greatest number of studies that have combined hypnosis and neuroimaging procedures have been directed towards understanding mechanisms underlying the experience of pain. Rainville *et al.* (1997) reported a PET study involving eight participants of 'moderate to high hypnotic' suggestibility on the Stanford Hypnotic Suggestibility Scale: Form A (SHSS:A; Weitzenhoffer and Hilgard, 1959). All participants were scanned while they experienced either 'neutral' or 'painfully hot' stimulation of their left hand, and some of the 'painfully hot' trials were accompanied by suggestions intended to increase or decrease the unpleasantness of the stimulus without affecting its intensity. Widespread areas of the brain, such as primary somatosensory cortex, known to be associated with pain experience, continued to be activated by the heat pain stimulus during suggested increases and decreases in unpleasantness. However, one of the brain areas (anterior cingulate cortex, ACC) showed activation changes in direct proportion to the subjective changes in unpleasantness, which suggests that ACC is implicated in the mediation of pain affect and that the level of activity in this area is directly related to the degree of unpleasantness experienced. In a follow-up study (Hofbauer *et al.*, 2001), again using PET, 10 participants with a wide range of hypnotic suggestibility (mean scores on the SHSS:A 6.9; range 1–10 out of 12) were tested using experimental procedures that were the same as for the Rainville *et al.* (1997) study except that the painfully hot stimulus was accompanied in hypnosis by suggestion either of reduced or of increased pain intensity rather than its unpleasantness. This time the brain image analysis (PET) showed significant modulation in primary somatosensory cortical areas, directly related to the direction of suggested change in pain intensity.

Importantly, no significant modulation of activity was seen in ACC in response to the differential suggestions. The outcomes of these two studies are important for theories of pain in providing a direct experimental demonstration supporting the existence of two hypothesized brain pathways responsible for the mediation of the affective and the sensory components of the pain experience. In particular, they are consistent with earlier clinical lesion studies that linked frontal lobe limbic activity with the emotional experience of pain.

Other studies have explored the clinical condition of 'phantom limb' and the pain that is often associated with it. Phantom limb is an intriguing phenomenon in which a patient may continue to experience the presence of a body part even after its deafferentation, traumatic loss or surgical removal (Ramachandran and Hirstein, 1998), presumably because the representation of the missing limb remains in somatosensory cortical areas of the brain. Experiences of pain, uncomfortable movements or postures may also occur in the phantom limb, and there is evidence that these may be alleviated by appropriate suggestions in hypnosis (Oakley *et al.*, 2002). In order to explore some of these aspects of phantom limb experience, Erslund *et al.* (1996) used fMRI in a male who reported pain in the wrist and fingers of his 'right arm' following its loss from above the elbow. In particular he felt the fingers were cramped and locked in an awkward position. Suggestions in hypnosis that he could control the 'fingers' of his right hand were effective and he was able to experience a feeling of movement and a corresponding reduction in discomfort. Scanning was carried out during hypnotically suggested finger tapping, and activations of contralateral somatosensory cortex were seen during movements of both the phantom fingers of the right hand and the actual fingers of the left hand. The activations were larger for the 'real' fingers of the left hand, possibly because these were accompanied by direct sensory feedback. In a similar study, but using PET, Willoch *et al.* (2000) used suggestion in hypnosis to explore phantom limb pain as well as phantom limb movement. Participants were eight moderate to high hypnotizables, scoring 2–5 out of maximum 5 on the Stanford Hypnotic

Clinical Scale for Adults (SHCS:Adult; Morgan and Hilgard, 1978/79), with phantom limb pain after unilateral arm amputations. During scanning, suggestions were given for the phantom limb to be placed in painful or comfortable positions, or to be engaged in painful or comfortable movement. Phantom limb movement activated the expected contralateral sensorimotor areas, and painful conditions were accompanied by activations in brain areas normally associated with pain intensity and pain unpleasantness (thalamus, anterior cingulate, posterior cingulate and lateral prefrontal cortices). Both studies thus produced a pattern of results that is consistent with the view that phantom limb experiences of both pain and movement are mediated in the same brain areas associated with the corresponding experience felt in the intact limb.

A somewhat different approach to understanding pain, and functional pain in particular, was taken by Derbyshire *et al.* (2004) who used fMRI neuroimaging to compare brain activations during the experience of physically produced pain (using a heat pad), hypnotically suggested (functional) heat pain and imagined heat pain. The study involved eight highly hypnotizable participants (HGSHS:A scores >8 on a scale of 0–12) who were hypnotized in all three of the experimental conditions. The main finding was that similar widespread areas of the brain normally involved in the mediation of pain experiences (thalamus, anterior cingulate, insula, prefrontal and parietal cortices) were seen during both the physically induced and hypnotically induced pain conditions whereas very little corresponding activation was seen in the imagined pain condition. Moreover, the magnitude of these activations in the physically induced and hypnotically induced pain conditions was directly proportional to the subjective ratings of pain intensity. This was the first direct experimental demonstration of a functionally generated pain, and supports the proposition that some clinically encountered, 'medically unexplained' pain conditions such as chronic back pain, atypical facial pain and fibromyalgia could be truly functional in origin, are not simply 'imagined', and may be mediated by activation in brain areas traditionally associated with the experience of physically generated

pain. The Derbyshire *et al.* (2004) findings have been replicated and extended in a similar fMRI study by Raij *et al.* (2005) with 14 participants who scored 8 or higher on the Stanford Hypnotic Susceptibility Scale: Form C (SHSS:C; Weitzenhoffer and Hilgard, 1962). Pain was induced physically in this study by laser pulses to the skin and functionally by suggestions with participants hypnotized in both conditions. Again, each of these experiences was accompanied by widespread activation throughout the brain circuitry associated with the mediation of pain, with the additional observation that source monitoring by medial prefrontal cortex may contribute to the subjective reality of pain in both cases.

14.3.2. Volition and motor control

In addition to chronic pain conditions, a significant number of patients report symptoms, such as paralyses, anesthetics, hearing losses and disturbances of speech, that seem likely at first sight to have a neurological cause but often no such cause can be found. Medically unexplained symptoms such as these were initially described as 'hysterical', and the similarity between these symptoms and the phenomena produced by suggestion in hypnosis has been noted many times (Oakley, 1999; Tallabs, 2005). While the label 'hysteria' for these types of medically unexplained symptoms is now less commonly applied (the term 'conversion disorder' is used instead), the conditions themselves remain prevalent (Akagi and House, 2001; Stone and Zeman, 2001). In light of the parallels alluded to above, hypnosis has been used as a tool with which to try to understand conversion disorder symptoms.

A PET study by Marshall *et al.* (1997) investigated a female patient with a conversion disorder paralysis of her left leg. Attempted movement of the paralyzed limb was accompanied by unusual activation of right ACC and right orbitofrontal cortex, and a failure of expected activations in contralateral sensorimotor cortex. A similar pattern of brain activations was found in a subsequent PET study by Halligan *et al.* (2000) where suggestion was used in hypnosis to create a comparable left leg paralysis in a volunteer participant of moderate to high hypnotic suggestibility (9 out of 12 on the

HGSHS:A). Taken together, these two single-case studies provide new and more direct evidence in support of the view that suggested hypnotic phenomena may share brain mechanisms in common with conversion disorder symptoms. These observations clearly need to be replicated with larger groups, but are potentially important for understanding the etiology of conversion symptoms and ultimately their treatment (Oakley, 2001).

If it is accepted that they are genuinely experienced phenomena, both 'hysterical' and hypnotic paralysis can be construed as failures of volitional control of movement. However, the absence of any demonstrable underlying neuropathology or change in fundamental motor control systems inevitably raises the question in any given instance of whether either of these is in fact a voluntarily engaged in deception or, where a material gain is involved, is an instance of malingering. In hypnosis, as with conversion disorder, we have only the participant's or the patient's word for the fact that they are genuinely attempting to move a 'paralyzed' leg and that the failure to move is at least temporarily beyond their control. The studies by Marshall *et al.* (1997) and Halligan *et al.* (2000) provide some evidence that the brain processes underlying the two are similar, but do not exclude the possibility that the activations seen in both are in fact those generated by intentional feigning.

Using hypnotic paralysis as an experimental analog of the clinical condition, Ward *et al.* (2003) investigated this dilemma using PET neuroimaging with 12 participants with scores of 8 or higher on the HGSHS:A (see also Oakley *et al.*, 2003). The participants were hypnotized throughout the session and half of the time they had a hypnotically suggested left leg paralysis. For the remainder of the time both legs were normal, but they were instructed to simulate the same symptom, with the offer of a financial reward if they were successful in doing so convincingly. The order of the two conditions was counterbalanced across the group. Neurological examinations by an independent observer failed to differentiate between the hypnotic paralysis and the feigned paralysis conditions. Brain activation patterns, however, were different, with increased activity in right orbitofrontal cortex being shown once

more in the hypnotic paralysis condition along with activations in right cerebellum, left thalamus and left putamen. In the feigned paralysis condition, increased activity was found in left ventrolateral prefrontal cortex and some right posterior cortical structures. This outcome supports the view that the paralyzes reported in the two earlier studies were subjectively 'real' and were not the products of faking or malingering.

There is one further neuroimaging study involving hypnosis that has looked at volition in relation to movement, but in this case the interest was in anomalous feelings of passivity or loss of self-agency associated with 'voluntary' motor acts. A significant part of the rationale for conducting this study lies in the fact that conditions such as schizophrenia and the effects of brain injury are commonly accompanied by the experience of loss of volitional control over body movements. These are manifest in clinical conditions variously identified as involving anarchic, alien or anomalous motor control and experimental analogs can be produced by suggestion in hypnosis in the form of 'ideomotor' movements. The study, by Blakemore *et al.* (2003), investigated the brain processes underlying feelings of passivity or alien control in six highly hypnotizable participants (HGSHS:A scores of 9 or more out of 12) hypnotized throughout a PET scanning session. During the session, repetitive vertical arm movements were produced: (1) voluntarily; (2) passively (using a pulley); or (3) by the suggestion that the arm would be moved passively by the pulley (when in fact the pulley was not activated). The latter suggestion produces the experience of 'alien' control, with the self-produced arm movement being attributed to the pulley and not the self. As expected, the voluntary arm movements and the suggested passive arm movements were accompanied by contralateral activations of motor control areas such as sensorimotor and premotor cortex, reflecting the fact that they were self-produced movements. However, in addition to these motor cortex activations, the suggested passive movements were associated with increased activations in bilateral cerebellum and parietal cortex, which also accompanied the truly passive movements produced by the pulley. The hypnotically suggested arm movements were

thus accompanied by brain activity that is normally associated with truly passive movements produced by an external agency. This outcome directly supports predictions from an influential cognitive model of motor control that explains the difference in neuropsychological terms between actions attributed to the self and those attributed to an external agency in terms of the projected sensory consequences of action (Miall and Wolpert, 1996).

14.3.3. Stroop effect

Raz *et al.* (2005) used hypnotic suggestion as an experimental tool to investigate a classic version of the Stroop effect (Stroop, 1935) in which a visually presented color word slows down responses to the color of ink used to print that word when the two are in conflict. For example, naming the ink color is slower when the word BLUE is printed in red ink than if it is printed congruently in blue ink. This phenomenon has been particularly influential in cognitive psychology in that it has been taken as a classic demonstration of the primacy and automaticity of word processing over color processing. Raz *et al.* (2005) used a combination of fMRI and electrical scalp recording of event-related potentials (ERPs) with eight high hypnotizables (SHSS:C scores 10–11) and eight low hypnotizables (SHSS:C scores 1–2). During scanning, while participants were engaged in the Stroop task, a post-hypnotic suggestion was given that on a verbal signal the letters presented on the screen would become meaningless ‘gibberish’, with the intention of leaving the perception of the ink color free of any conflicting influences that would normally derive from the meaning of the color word itself. As predicted, the Stroop interference effect was reduced or eliminated for the high hypnotizables but not the lows in response to the pre-arranged signal. In addition, the post-hypnotic suggestion effect was associated with reduced activation in ACC compared with no suggestion and control (low hypnotizable) conditions, which is consistent with the suspected role of this brain area in conflict monitoring. If these effects can be reliably replicated, this is potentially a very significant outcome for cognitive psychological research into attention as the Stroop effect has long been considered to

be based on automatic processes that cannot normally be prevented or stopped (see also Laurence *et al.*, Chapter 9, this volume). There was also evidence in the Raz *et al.* (2005) study of suggestion-related reduction in activation in posterior visual processing areas congruent with changes in the processing of visually presented words. A similar observation in relation to processing color has been reported in a study by Kosslyn *et al.* (2000), which I describe below.

14.3.4. Hallucinations

In schizophrenia and some other conditions, individuals can not only misattribute the sources of their own actions but can confuse their own internally created auditory experiences with inputs generated by alien agencies or as arriving from the outside world. Szechtman *et al.* (1998) used PET to explore analog forms of these hallucinatory auditory experiences generated by suggestion following a hypnotic induction. The experimental group of eight highly hypnotizable participants were selected on the basis of scores of 8 or more (out of 12) on both the HGSHS:A and the Waterloo–Stanford Group C Scale of Hypnotic Susceptibility (WSGC; Bowers, 1993) plus the ability to experience hypnotically suggested hallucinations reliably in separate clinical tests. Participants were hypnotized throughout the scanning session and brain activity was measured when they: (1) were listening to a tape-recorded voice; (2) were told the tape recording was to be played to them when in fact no sound was transmitted (they hallucinated the voice); and (3) when they were imagining the tape-recorded voice ‘as vividly as possible’. The main finding was that significant activations were found in right ACC when the participants were actually hearing the voice on the tape and when they were hallucinating the voice, but not when they were imagining it. There were significant correlations between these ACC activations and ratings of both the ‘clarity’ and ‘externality’ of the hallucinated experience. A control group of high hypnotizables who were nonhallucinators did not show this pattern of results. Similar activations of ACC have been seen in schizophrenics during hallucinations, however, suggesting that the hypnotic hallucination may serve as an

experimentally controllable model for the purposes of testing hypotheses about the mechanisms underlying hallucinatory experiences in schizophrenia.

14.3.5. Conclusions on instrumental research

While the investigation of hypnosis was not the main purpose of these studies, they do have implications for our understanding of phenomena produced by hypnotic suggestion. An important and commonly raised issue is whether these phenomena are ‘real’ as opposed to being the products of intentional role-playing, faking or compliant reporting (Kallio and Revonsuo, 2003). The fact that the hypnotically suggested effects are accompanied by clear changes in brain areas that would be normally associated with the mediation of the processes in question (pain, involuntary movement, inhibition of voluntary movement, monitoring conflict in cognitive systems and speech processing) supports the view that the effects are ‘real’, both at the level of subjective experience and at the level of underlying brain processes. This view is further supported in the study by Ward *et al.* (2003) that addressed directly the question of faking or malingering, and found, for suggested limb paralysis at least, that different brain mechanisms appeared to be associated with the hypnotically suggested effect compared with its intentional simulation by motivated, hypnotized individuals.

In the absence of no-hypnosis control conditions, these instrumental studies cannot of course tell us whether or not the hypnotic induction procedure contributes to the ‘realness’ of the suggested phenomena. There is interesting evidence from two of the studies, however, that there is a difference in brain activity following a hypnotic induction procedure between the effect of instructions to ‘imagine’ compared with suggestions to ‘experience’ for both pain (Derbyshire *et al.*, 2004) and speech (Szechtman *et al.*, 1998). In particular, the hypnotically suggested experience is more similar in terms of associated brain activity to the physical presence of a painful or an auditory stimulus than is the imagined experience. This observation has implications for the language used by experimenters exploring hypnotic phenomena and for

clinical practice using hypnosis. In particular, in the latter context, it has been suggested on the strength of these neuroimaging results that hypnotically suggested experiences may give an experience of ‘virtual reality’ that may be particularly helpful in facilitating exposure therapies for conditions such as phobias (Walters and Oakley, 2003). Again, in the absence of no-hypnosis comparisons it remains to be seen if the same differences would be observed when comparing suggestions to experience with instructions to imagine without a preceding hypnotic induction.

The brain activations reported in this section following hypnotic suggestion vary from study to study and are entirely consistent with what would be expected from what is known of the mediation of the various phenomena when they are elicited normally, either by the corresponding physical stimulus or by a congruent clinical condition. However, one particular brain structure, the ACC, stands out as modulating its activity during the suggested hypnotic effects in the majority of these studies. As this is seen over a range of sensory, motor and cognitive systems, it could be that this brain area is associated either with the state of hypnosis, or with the execution of suggestions irrespective of their content. However, the ACC is a functionally complex structure and has been implicated in the mediation of pain, motor inhibition, selective attention, conflict resolution and assigning emotional significance to incoming stimuli (Tallabs, 2005). The most parsimonious conclusion from this set of data, therefore, is that the widespread involvement of ACC across the range of hypnotically suggested effects in these instrumental research studies is because it is also involved in their mediation without hypnotic induction or suggestion.

14.4. Intrinsic hypnosis research

14.4.1. ‘Hypnosis’ as trance plus suggestion

The studies I describe in this section have investigated ‘hypnosis’ and its mechanisms by using specific phenomena produced by suggestion following a hypnotic induction procedure

compared with a nonhypnotic state. That is, in terms of the distinction drawn earlier, the 'hypnosis' condition has consisted of trance plus suggestion and the no-hypnosis condition has involved neither trance nor suggestion. The hypnotic phenomena investigated include reliving of positive autobiographical events, analgesia, catalepsy and alterations in color perception.

14.4.1.1. Reliving positive autobiographical events

Using PET, Maquet *et al.* (1999) set out to 'describe the distribution of cerebral blood flow during the hypnotic state'. The authors reported brain activations in nine highly hypnotizable participants (SHSS:C >8) in three conditions: (1) when 'alert' and listening to 'pleasant' biographical information from their own lives whilst imagining what happened to them in the situations being described; (2) following the induction of a 'hypnotic state' (the procedure used was not described) during which they were 'invited to have revivification of pleasant life experiences'; and (3) 'hypnotized with forced color hallucinations' in which they were 'asked to focus on their preferred colors and to view settings and objects in these colors'. Subjects described their experiences in the 'hypnotic state' (condition 2) as involving 'vivid, detailed and colorful revivifications of pleasant memories, having mentally re-enacted them'. No significant differences in activations were found between the two hypnosis conditions (2 and 3), suggesting that both these tasks made similar cognitive demands on the participants. The most prominent modality of experiences in the two hypnotic conditions was visual, with some somesthetic and olfactory imagery, but there were no reports of auditory imagery. Motor imagery was commonly reported when participants engaged in appropriate 'actions'.

Comparing both these 'hypnosis' conditions (2 and 3) with the 'alert' condition (1) revealed widespread increases in activation in the hypnosis conditions involving occipital, parietal, prefrontal and cingulate cortices, and relatively lower activations of temporal cortical areas. It seems clear from these results that listening to autobiographical information and engaging in related imagery without a hypnotic induction in the 'alert' condition activated brain areas

different from those when participants were involved in self-selected revivification of past events or hallucinating colorful objects and scenes after a hypnotic induction in the 'hypnosis' conditions. The differences, however, appear as likely to be attributable to the differing task demands as to the presence or absence of a hypnotic induction procedure or 'hypnotic state', particularly as studies reviewed in the previous section (Szechtman *et al.*, 1998; Derbyshire *et al.*, 2004) have indicated a clear distinction in brain processes between instructions to 'imagine' and suggestions to 'experience' phenomena even within the hypnosis condition. Strong engagement with visual experiences reported in response to the revivification/hallucination suggestion in the hypnosis conditions, for example, might account for increased activations found in the various occipital areas, and the more anterior activations seen in precentral, premotor and parietal areas would be expected in the presence of strong motor imagery. Equally, the relatively greater levels of temporal activation seen in the 'alert' condition could be seen as a reflection of the participants being required to listen to sentences containing pleasant information taken from their own past, particularly as the 'relivings' or 'hallucinations' in the two hypnosis conditions were not accompanied by significant auditory experiences. These results are interesting in illustrating that congruent brain processes accompany autobiographical relivings and visual hallucinations in hypnosis. It is not possible, however, to draw a firm conclusion as to the role of the hypnotic induction procedure or the 'hypnotic state' in producing the differences in brain activations observed between the hypnotic and alert states, as the tasks were different in the two conditions.

14.4.1.2. Analgesia

Four studies have compared the effects of a hypnotic induction procedure combined with suggestions leading to analgesia with a variety of no-hypnosis conditions. In the first of these, specific analgesia suggestions were given following a hypnotic induction procedure (Wik *et al.*, 1999). In the other three studies, the hypnotic suggestions were for the reliving of positive autobiographical memories (Faymonville *et al.*, 2000, 2003) or guided imagery experiences

(Schultz-Stubner *et al.*, 2004), all of which resulted in incidental analgesia effects in the hypnosis condition compared with the no-hypnosis condition.

Wik *et al.* (1999) used PET neuroimaging to explore cerebral mechanisms behind hypnotic analgesia in eight highly hypnotizable fibromyalgia pain patients (HGSHS:A scores >9). To control for potential differences in visual processing, participants in all conditions watched videos of people walking in a park. In the hypnotic analgesia condition, 'hypnosis was induced by gently talking to the subjects, instructing them to be relaxed and to go into deep trance to watch the videotapes and not to feel any pain whatsoever'. For the no-hypnosis, 'resting wakefulness' control condition, the same participants 'were told to be comfortable and watch the videotapes'. The hypnotic analgesia condition was accompanied by a modest but significant lowering of pain ratings from 4.3 to 3.2 (on a 0–10 scale). Brain changes associated with hypnotic analgesia were increases bilaterally in orbitofrontal and subcallosal cingulate cortices, unilaterally in the right thalamus and left inferior parietal cortex, and a decrease bilaterally in cingulate cortex. The authors concluded that this pattern of activation during hypnotic analgesia is consistent with widespread alterations in brain areas normally involved in the processing of nociceptive stimulation. The design of the study, however, does not allow for any conclusion as to whether the brain activation differences between the hypnosis and no-hypnosis condition are due to the induction procedure, the analgesia suggestions or a combination of the two.

In an extension of the Maquet *et al.* (1999) study, Faymonville *et al.* (2000) focused on the 'antinociceptive effects of hypnosis', again using PET. The participants were 11 highly hypnotizable volunteers (SHSS:C >8) and were tested under three conditions: (1) resting state—in which they were encouraged to remain immobile and to 'empty their minds'; (2) mental imagery—in which they had to listen (just before the scan) to sentences containing pleasant information from their own past and were then instructed during the scan to 'vividly imagine a pleasurable autobiographical memory'; and (3) hypnotic state—consisting of a 3 min

induction involving muscle relaxation followed by the suggestion to 're-experience their pleasant autobiographical memory'. Participants were tested in all three of these conditions during exposure to either comfortably warm (39°C) or painfully hot (47°C) stimuli delivered during the scans to the participant's right hand. Pain ratings were significantly lower in the 'hypnotic state' condition than in the other two conditions, confirming the expected analgesic effect of their hypnotic procedure. The 'hypnotic state' also differed from the other two conditions by showing increased activation of right extrastriate cortex and right ACC. As in Maquet *et al.* (1999), task demands appear to be different in the 'hypnotic state' condition compared with the two no-hypnosis conditions in this study irrespective of the induction procedure, and it is not clear whether the differences between conditions are attributable to the 'hypnotic state', the different cognitive tasks and suggestions being carried out or the analgesia effect. The extrastriate cortical activations may reflect some visual components of the reliving experience suggested to the participants only in the 'hypnotic state condition'. In particular, the fact that ACC regional activation in this study varied in proportion to pain sensation indicates that it is related more to the analgesia effect than to any general aspect of the hypnotic state *per se*.

Having demonstrated in their earlier study that ACC activity co-varies with the reduction in affective and sensory responses to noxious thermal stimulation in their 'hypnotic state' condition, Faymonville *et al.* (2003) set out, again using PET, to assess 'changes in cerebral functional connectivity related to the hypnotic state compared to simple distraction and the resting state'. The participants were 19 highly hypnotizable volunteers (SHSS:C >8 out of 12) exposed as in the previous study to hot noxious or warm nonnoxious stimulation of the right hand under each of three conditions: (1) resting state ('participants were asked to relax and empty their mind'); (2) mental imagery ('subjects were instructed simply to imagine a pleasurable autobiographical memory and were urged not to enter the hypnotic state'); and (3) hypnotic state ('induced using eye fixation, a 3 min muscle relaxation procedure and

permissive and indirect suggestions'. The nature of the suggestions was not specified, but following the hypnotic induction 'each subject was invited to re-experience very pleasant autobiographical memories'). No significant pain reduction was found in the mental imagery condition compared with the resting condition but, as in the previous study, pain reports were significantly lower in the 'hypnotic state' condition compared with these two no-hypnosis conditions.

On the basis of their earlier studies, midcingulate cortex had been identified as being centrally involved in the mediation of these changes in pain perception, and Faymonville *et al.* (2003) explored here the hypothesis that 'hypnosis induced analgesia can be explained by an enhanced modulation between the midcingulate cortex and the large neural networks involved in the sensory, affective and cognitive aspects of noxious processing'. Consistent with the hypothesis, analysis of the PET data showed that the 'hypnotic state' compared with normal alertness (i.e. rest and mental imagery) significantly enhanced the functional modulation between midcingulate cortex and a large neural network encompassing bilateral insula, pregenual ACC, presupplementary motor area, right prefrontal cortex and striatum, thalamus and brainstem. This is a further demonstration of the spontaneous analgesia associated with a suggested revivification of positive experiences following a hypnotic induction and implicates the midcingulate cortex in its mediation by the modulation of a large cortical and subcortical network underlying sensory, affective, cognitive and behavioral aspects of nociception. The design of the study, however, does not allow us to distinguish the contribution of the hypnotic induction procedure itself from that of the concurrent revivification task in producing these changes. It is also relevant to note here that a later study (Rainville *et al.*, 2002) that used a hypnotic induction procedure without suggested revivification or analgesia suggestions found that the experience of pain was not altered by 'hypnosis alone'.

Schultz-Stubner *et al.* (2004) reported an fMRI study very similar in design to the previous two to explore 'the putative effects of clinical hypnosis on pain', but used suggested positive

imagery rather than revivification of autobiographical memories to create an incidental analgesia effect. The study involved 12 participants exposed to painful heat stimuli to their left forearm under a hypnosis and a no-hypnosis condition in counterbalanced order. No standardized test of hypnotic susceptibility was administered, but the hypnotic responsivity of the participants was indicated by a limb levitation test carried out during the hypnotic induction procedure. The hypnosis induction procedure, which was described to the participants as 'deep relaxation' rather than 'hypnosis', consisted of an eye fixation and eye closure followed by suggestions of heavy and warm body sensations, starting from the eyelids and spreading over the whole body, and then images such as lying on a beach and listening to the ocean waves were introduced. For the no-hypnosis condition participants were asked to think of 'something nice' and engage in images at their leisure. Participants were not blinded to the objectives of the study and were informed about the concept of hypnosis (without using the term hypnosis) as a 'deep relaxation technique'. All participants reported reduced pain (<3 out of 10) in the hypnosis condition compared with the no-hypnosis condition (>7). Without hypnosis, activity was seen in response to the painful stimulus in the known pain network—insula, ACC and primary sensory cortex. In the hypnosis condition, there was new activation in basal ganglia but reduced activity in insula, middle cingulate gyrus and primary sensory cortex. Also, activation in left ACC was significantly increased under hypnosis whereas right ACC activity was unchanged. This study extends the previous two by showing that introduction of relaxing guided imagery following a hypnotic induction procedure is more effective than simply thinking positive thoughts plus spontaneous imagery without a hypnotic induction in creating an analgesic effect, and that this is accompanied by related changes in brain activity. Whether these differences are due to effects of the hypnotic induction procedure, to the different mental tasks involved in the two conditions or to the analgesia effect is again not fully resolvable, though the last of these seems likely to account for the majority of them.

14.4.1.3. Catalepsy

In what appears to have been the first PET study involving hypnosis, 15 ‘highly hypnotizable’ participants (SHSS:C—no scores are quoted) who had previously undergone ‘hypnotherapy’ for psychosomatic problems were scanned in a counterbalanced design in ‘resting wakefulness’ and while hypnotized ‘in order to elucidate the physiological effect of hypnosis’ (Grond *et al.*, 1995). In both the hypnosis and the no-hypnosis conditions, the participants were ‘resting in a comfortable supine position, with eyes closed and ears unoccluded’. The ‘hypnosis’ condition also involved an induction procedure that included suggestions for catalepsy of the whole of the participant’s body except the arm used for catheterization required for the PET procedure. The type of induction procedure used and the suggestions used to induce the catalepsy were not reported, but the term ‘catalepsy’ commonly implies a suspension of sensibility and voluntary movement characterized by ‘waxy’ rigidity of the body and limbs, which maintain any posture in which they are placed (Orne, 1959). For the purpose of monitoring the persistence of the catalepsy, the noncatheterized arm was raised and remained extended at the elbow with hyperextension of wrist and index finger for approximately 30 min during the scans. The authors reported no significant change in metabolism in the whole brain and no lateralized differences. Using a relative change index, they reported that compared with the resting condition, the hypnosis condition was accompanied by significant underactivation in visual cortex and a significant but moderate overactivation in brain areas involved in sensorimotor functions (sensorimotor cortex, basal ganglia, thalamus and cerebellum). The authors interpreted the increased activation in sensorimotor areas in the hypnosis condition as a consequence of the protracted, uncomfortable arm elevation associated with the catalepsy suggestion. The reduction in visual cortex activation they felt was related to a switch from an external to an internal focus of attention, which could reflect a more general attribute of the hypnotic state or could be a more direct consequence of the catalepsy suggestions. Overall, it seems more parsimonious to conclude that all the differences

in brain activation referred to above relate specifically to the suggested catalepsy.

14.4.1.4. Color processing

Kosslyn *et al.* (2000) used PET neuroimaging ‘to determine whether hypnosis can modulate color perception’. Participants were eight highly hypnotizable subjects pre-screened for the ability to experience color hallucinations. Hypnotizability was determined using the SHSS:C and the Hypnotic Induction Profile (HIP; Spiegel and Spiegel, 1978). Mean scores for the experimental group on the SHSS were 10.5 (out of 12) and on the HIP were 9.1 (out of 10). Scanning sessions were conducted in two blocks in counterbalanced order, and in both blocks participants were presented on some trials with a colored stimulus display and on other trials the same display rendered as a grayscale image. One block was preceded by participants ‘having undergone hypnotic induction’ (hypnosis condition) and the other block was not (no-hypnosis condition). The hypnotic induction procedure used was not described. In both the hypnosis condition and the no-hypnosis condition, participants were instructed on some occasions to perceive the stimuli veridically as colored or grayscale. In the hypnosis condition they were instructed on other occasions ‘to alter actively the stimulus, to drain or add color’ in order to create hallucinated colors when presented with the grayscale stimulus and the hallucinated absence of colors when presented with the colored stimulus. In the no-hypnosis condition, in order to provide a mental imagery control for the hypnotic hallucination instructions, participants were asked to ‘try to “remember and visualise” the stimulus in its other form’. Veridical viewing in both the hypnosis and no-hypnosis conditions was associated with increased activation in color processing (fusiform) areas of visual cortex for the color stimuli compared with grayscale stimuli on both sides of the brain. Comparable bilateral activations of fusiform areas were also seen in the hypnosis condition for hallucinated color compared with the hallucinated grayscale experience. In the no-hypnosis visual imagery condition, however, this differential effect was seen only in the right hemisphere.

This outcome provides a further clear demonstration that specific suggestions following a

hypnotic induction are associated with changes in activation in brain areas normally involved with processing the targeted experience. There is also an interesting parallel with the observation of Derbyshire *et al.* (2004) and Szechtman *et al.* (1998) that a hypnotically hallucinated experience is more similar in terms of brain activation to the corresponding physically produced experience than it is to imagining the same experience in hypnosis, though in the Kosslyn *et al.* (2000) study the imagination condition was conducted without a hypnotic induction. In terms of the distinction drawn earlier, this study does not allow any clear conclusion as to the role of the hypnotic state, or trance, in producing the differences observed in fusiform area activation in the hypnosis and no-hypnosis conditions as the cognitive demands were different in the two cases. Specifically, the participants' task was to hallucinate color changes in the hypnosis condition and to imagine color changes in the no-hypnosis condition.

14.4.2. Conclusions on studies of trance plus suggestion

The studies in this section were not designed to identify any effects of a hypnotic induction procedure and any consequent hypnotic state or trance separately from the effects of suggestions or other ongoing cognitive tasks. They are, however, a very significant contribution in that they add further weight to the view that 'hypnotic' phenomena (i.e. phenomena produced by suggestion following a hypnotic induction procedure) are 'real' in the sense that I used the term in the discussion above. That is, they are not simply products of reporting bias, faking, etc. As in the case of the 'instrumental' studies reviewed earlier, the suggested effects are accompanied by clear neural activation changes that engage the same brain areas that are observed, or would be expected to be involved, in mediating the same phenomena produced by more naturalistic means. This clearly reinforces the potential effectiveness of hypnotically suggested effects as a neurocognitive tool. A limitation of these studies from the perspective of the earlier distinction between the possible effects of the hypnotic induction procedure itself (trance) and of suggestions that accompany

it is that the no-hypnosis conditions used for comparison have not only omitted the induction procedure but have also omitted the suggestions. The hypnosis conditions employed in these studies have included suggestions specifically to produce analgesia (Wik *et al.*, 1999); catalepsy (Grond *et al.*, 1995); color hallucinations (Maquet *et al.*, 1999; Kosslyn *et al.*, 2000); and revivification, reliving or guided imagery, all of which had an analgesic effect (Maquet *et al.*, 1999; Faymonville *et al.*, 2000, 2003; Schultz-Stubner *et al.*, 2004). In contrast, no-hypnosis control conditions have involved resting (Grond *et al.*, 1995; Wik *et al.*, 1999; Faymonville *et al.*, 2000, 2003); listening to autobiographical material plus mental imagery (Maquet *et al.*, 1999); and mental imagery (Faymonville *et al.*, 2000, 2003; Kosslyn *et al.*, 2000; Schultz-Stubner *et al.*, 2004). As already noted, there appear to be differences at the level of brain activation between 'experiencing' (or hallucinating) a suggested effect and 'imagining' the same experience even when these are both carried out in hypnosis. Using a mental imagery task without an induction procedure as a no-hypnosis control for a hypnosis condition that includes both an induction procedure and suggested experiential change will produce differences that are as likely to be due to the different task demands as they are to the presence or absence of a hypnotic induction and any possible state change (trance) that might accompany it (Kirsch, 2005).

One reason offered for making the task demands different in the two conditions is that the wording used in the hypnosis condition might lead the highly hypnotizable participants 'to fall into a hypnotic state' in the no-hypnosis condition (e.g. Kosslyn *et al.*, 2000). This makes the assumption that there is a hypnotic state to 'fall into' and that it is inextricably linked to the execution of suggested effects (see also Barabasz and Barabasz, Chapter 13, this volume, on spontaneous hypnosis). The importance of addressing the distinction between hypnosis and suggestion that this assumption raises is highlighted in a recent study by Raz *et al.* (2006) in which the effects of suggestion given after a hypnotic induction to alter Stroop interference were compared with the effects of the same suggestion given without a hypnotic

induction in a matched group of highly hypnotizable participants. Their finding was that the Stroop interference effect was reduced to the same extent in both groups irrespective of the use of a hypnotic induction procedure. Raz *et al.* (2006) concluded that ‘it is suggestion rather than hypnosis that reduces the Stroop effect’. A similar observation has been reported for pain by Milling *et al.* (2005) who found no significant differences in subjective pain reports when the same analgesia suggestion was given in a hypnosis or in a no-hypnosis condition. Neither the Raz *et al.* (2006) or the Milling *et al.* (2005) study included neuroimaging, and an important next step would be to compare brain activation patterns when the same suggestion is given with and without a hypnotic induction in high hypnotizables. There do not appear to be published reports of such a comparison using PET or fMRI neuroimaging procedures for the Stroop reduction effect, but there is some evidence for suggested alterations in pain from a study that I describe in the next section.

14.4.3. Suggestion with or without trance

In an ‘instrumental’ hypnosis study that investigated the brain mechanisms underlying clinically reported fibromyalgia pain, Derbyshire *et al.* (2007) used suggested ‘pain dial’ imagery in 13 hypnotized participants (HGSHS:A >8) to modulate their own fibromyalgia pain experience during fMRI scanning. Widespread areas of the brain (cerebellum, thalamus, midcingulate cortex, primary and secondary sensory cortex, inferior parietal cortex, prefrontal cortex and insula) showed changing levels of activation corresponding to the intensity of the subjectively reported pain experience. It seems clear from this that fibromyalgia pain involves activation of the traditionally identified ‘pain matrix’. Taken with the results of studies above in the section on instrumental hypnosis studies of pain, these data are consistent with the view that fibromyalgia pain could be functional in origin. But since the efficacy of hypnotic analgesia suggestions in modulating physically induced pain is well established (Montgomery *et al.*, 2000), they are not definitive evidence for this. Derbyshire *et al.* (2007) also speculated that the activations seen in

‘supervisory neural structures’ (such as prefrontal cortex and medial ACC) when the fibromyalgia pain was being modulated by suggestion might reflect some of the cognitive processing that underlies the hypnotic alteration of pain experience. It is not possible to determine within this set of observations, however, whether these particular activations reflect changes in processes that are involved in the generation of fibromyalgia pain itself or the effects of suggestion *per se* rather than being specifically related to the ‘hypnosis’ condition.

Fortunately some light can be shed on these and related questions raised in the previous section because the study also included a no-hypnosis condition in which the same pain dial-based suggestions were administered to the same participants without being preceded by a hypnotic induction. Subjective reports of the degree of change in pain experience in response to suggestion were not significantly different in the two conditions irrespective of the presence or absence of a preceding hypnotic induction procedure. This is similar to the lack of difference seen in response to suggestion between the hypnosis and the no-hypnosis conditions in the Raz *et al.* (2006) Stroop effect study and by Milling *et al.* (2005) for analgesia suggestions. In comparison with Raz *et al.* (2006), there are a number of differences, however, in that the reduced Stroop effect depends on over-riding what are believed to be automatic attentional processes, whereas reporting of subjective pain levels is voluntary and therefore open to reporting bias based on experimental demands, expectations, etc. Also the suggested effect in the Raz *et al.* (2006) study was achieved via a post-hypnotic suggestion whereas in the Derbyshire *et al.* (2007) and Milling *et al.* (2005) studies the suggestion was executed during hypnosis.

Despite the similarity of the reports of pain experience in response to hypnotic and nonhypnotic suggestion in the Derbyshire *et al.* (2007) study, participants also reported that they experienced significantly more control over their pain in the hypnosis condition. Consistent with this, the brain activations were much weaker overall in the no-hypnosis condition, with significant attenuation of the suggested effects being seen in the thalamus and insula and in prefrontal and

sensory cortices. This indicates that at the level of brain activity at least, there appear to be significant differences in the effectiveness of suggestions depending on whether or not they are administered after a hypnotic induction procedure, even when these differences are not evident at the level of subjective report. It is interesting that there are similar findings in the behavioral realm. McConkey *et al.* (2001), for example, found no differences in reported success of hypnotic and waking suggestions for gender change, but ‘dial ratings’, in which participants turned a dial to indicate the strength of their experience, showed that the highly hypnotizable participants achieved the experience sooner in hypnosis than in the no-hypnosis condition. It is also interesting that the neuroimaging evidence from Derbyshire *et al.* (2007) indicates that in this situation at least these highly hypnotizable participants did not seem to ‘slip into hypnosis’ when given the same suggestion in the no-hypnosis condition.

14.4.4. ‘Hypnosis’ as trance

The Derbyshire *et al.* (2007) study just described indicated that engaging an individual in a hypnotic induction procedure (identified as such) results in a significant enhancement in the brain changes associated with a suggestion compared with the effects of the same suggestion without a hypnotic induction procedure. One possible implication of this is that the induction procedure itself, for whatever reason, creates a steady-state alteration in brain activity that mediates the observed changes in the effect of the suggestion. A first step in exploring this possibility is to investigate the effects of induction procedures independently of specific suggestions. The four studies that I describe in this section adopted this approach. That is, they have regarded ‘hypnosis’ as a background state of altered mental processing independent of specific suggestions—sometimes referred to as ‘neutral hypnosis’ (Edmonston, 1991; Kallio and Revonsuo, 2003) and corresponding to ‘trance’ in the definition adopted in this review. The further assumption is that there is an alteration in conscious experience that accompanies the hypnotic ‘state’ and that this alteration is what is generated by traditional hypnotic

induction procedures. Traditional procedures typically include suggestions for ‘relaxation’ alongside instructions for focused attention, and engagement with inner mental processes such as imagery. For this reason, ‘relaxation’, especially mental relaxation (or mental calm), will be included as a component of the hypnotic ‘state’ typically produced, though as noted earlier it is not evident that physical relaxation at least is an essential component of such a state (Banyai and Hilgard, 1976; Wark, 2006). All of the studies I review in this section have engaged the participants in the same mental task or activity in both the hypnosis (‘trance’) condition and the no-hypnosis condition. This has the effect of reducing individual variation in the incidental mental activity that the participants engage in, both across subjects and between conditions within subjects, which enhances the possibility of detecting differences that might be due to the induction procedure *per se*. The common tasks were experiencing warm and painfully hot stimuli (Rainville *et al.*, 1999, 2002), watching a flashing checkerboard pattern (Deeley *et al.*, 2007a) and engaging with a Stroop cognitive conflict task (Egner *et al.*, 2005).

The first of these studies (Rainville *et al.*, 1999) provides a more direct evaluation of the effects of trance using data drawn from an earlier PET study that investigated the effect of suggestion on pain affect and pain intensity (Rainville *et al.*, 1997). The data derive from eight participants screened for moderate to high hypnotic susceptibility defined as scores of 8 or more out of 11 on a shortened version of the SHSS:A (Weitzenhoffer and Hilgard, 1959) and their ability to modulate the affective component of heat pain in response to suggestion. The two conditions of interest here are pre-hypnosis condition (baseline) and a hypnosis-alone condition (hypnosis) in both of which the participant’s left hand was immersed in water that was ‘neutral’ or ‘painfully hot’. The baseline condition was one of restful wakefulness with eyes closed. The hypnotic induction procedure used to create the hypnosis condition was taken from the SHSS:A, which, in addition to trance-related instructions, includes eye closure and suggestions for relaxation. The task demands in the baseline and hypnosis condition were very similar however—sitting whilst feeling

relaxed with eyes closed experiencing a heat stimulus—which leaves the presence or absence of the hypnotic induction procedure, and any induction-related trance state, as the major feature differentiating the two. Combining the two types of heat stimulus and comparing the hypnosis condition with the baseline revealed increased activations with hypnosis bilaterally in occipital regions (fusiform gyrus, middle occipital gyrus and lingual gyrus) and in inferior frontal gyrus; increases on the right in anterior cingulate gyrus (caudal part) and anterior superior temporal gyrus; increases in the left insula; and decreases in parietal cortex (right inferior parietal lobule, right medial precuneus and left posterior cingulate gyrus), left medial superior frontal gyrus and left posterior middle temporal gyrus.

Of these changes, the widespread activation in occipital regions was the most striking hypnosis-related effect. This seems likely to be linked to the participants engaging in vivid visual imagery in the hypnosis condition. A number of the participants reported that they did in fact do this, though they had not been explicitly instructed to do so. In this context, it is also interesting that the pain stimulus appeared to inhibit the potentially trance-related occipital activations. This observation is consistent with the reports from some participants in the study that the painful stimulus interfered with their experience of ‘hypnosis’. Another interesting outcome from this study is the hypnosis-related activity increase in the right ACC compared with baseline activity that was seen for both neutral and painful stimuli. The earlier report based on these same scans by Rainville *et al.* (1997) also identified ACC as an area of activation associated with suggestion-based modulation of the affective component of the heat pain stimulus. However, the locus of the ‘hypnosis’ and the ‘pain’ areas within ACC were different. Another hypnosis-related change was the decrease in activation in posterior parietal sites. This is consistent with a decrease in attention to extraneous stimuli and general body-sense awareness that participants in hypnosis frequently report. In interpreting these differences, it is worth keeping in mind that some of them may be due to the presence of relaxation suggestions in the hypnosis condition, which may have

different brain effects compared with simple instructions to relax in the baseline condition. It is possible, for example, that the hypnosis suggestion may be more related to mental calming than to physical relaxation.

In a subsequent report from the same group of investigators (Rainville *et al.*, 2002), 10 volunteer participants of widely varying levels of hypnotic susceptibility (ranging from 1 to 10 out of 11 on a shortened SHSS:A) were tested while experiencing warm or painfully hot stimulation of the left hand under the same baseline and hypnosis conditions as in Rainville *et al.* (1999). As before, the hypnotic induction procedure involved trance instructions combined with relaxation suggestions, but again with no suggestion given relating to the experience of pain. A subtraction analysis (hypnosis minus baseline) confirmed hypnosis-related activations in both occipital lobes, right inferior frontal gyrus and right superior temporal gyrus, left insula and right ACC regions. Decreased activation associated with hypnosis was again seen in right parietal cortex (inferior parietal lobule and precuneus) and left posterior temporal cortex. Rainville *et al.* (2002) also took self-ratings from their participants of relaxation and absorption after each scan. They found significant increases on both measures following the induction procedure, and both showed modest but significant correlations with hypnotizability.

Looking at brain activations associated specifically with absorption, Rainville *et al.* (2002) identified a collection of areas showing increases in activation including upper pons, thalamus, rostral areas of right ACC, prefrontal cortex (especially right ventrolateral frontal cortex, right inferior frontal cortex and anterior insula) and right inferior parietal lobule. There was a negative correlation (reduced activation) between absorption and activity in the left inferior parietal lobule, right precuneus, posterior cingulate cortex and both occipital cortices. Increases in brain activation associated with the relaxation suggestion were reported in right precuneus, left inferior parietal lobule and bilateral occipital cortices. Reductions in activation associated with relaxation were found in mesencephalic brainstem, thalamus, prefrontal areas (in particular the superior frontal gyrus extending over rostral ACC, both temporal lobes, right

parietal operculum and lobule, and somatosensory cortex).

The absorption-related increases in activation in ponto-mesencephalic brainstem nuclei and thalamus may reflect attention-related activity of these areas and, in particular via pathways influencing activation in ACC, may serve to maintain focused attention and cortical arousal in hypnotized subjects. Absorption-related increases in activity were also found in the right anterior parietal lobule and bilaterally in prefrontal cortices, most strongly in ventrolateral frontal cortex, over the inferior frontal gyrus and in the anterior insula. Activation in these areas has been found in other studies to correlate with attentional processes in tasks associated with visual, auditory and somatosensory stimuli. Rainville *et al.* (2002) concluded that the co-ordinated pattern of activity in brainstem, thalamus, ACC, right inferior frontal gyrus and right inferior parietal lobule in particular provides very strong evidence that mental absorption is an experiential correlate of the activation of the brain's executive attentional network and that this system plays a critical role in the production of hypnotic states.

Negative absorption-related effects were found in right and left parietal cortices and in precuneus independently of thalamic activity. Right posterior parietal cortex has been identified as part of a vigilance/orientation system, and the observed decreases in this area may therefore reflect disengagement towards external sources of stimulation. More broadly, right and left posterior parietal cortices have been associated with monitoring external space and time. The absorption-related pattern of parietal activations are thus consistent with internal focusing of attention and alterations in spatio-temporal orientation frequently reported by individuals following an hypnotic induction. It is important to note here that the induction instructions used by Rainville *et al.* (2002) included specific directions to decrease orientation to 'irrelevant' external sources of information, which raises the possibility that the changes relate to the particular induction procedure used. A reduction in activity in both occipital lobes and an associated reduction in thalamic activity were also found to be linked with mental absorption. The authors

interpreted this in terms of the absorption-related engagement of the executive attentional network, which serves to reduce activity in unattended sensory channels.

In contrast to absorption, negative correlations were reported with relaxation in mesencephalic brainstem and thalamus, which may reflect the contribution of these areas to cortical arousal and wakefulness. Rainville *et al.* (2002) suggested that relaxation-related decreases in right lateral posterior parietal cortex and in right prefrontal cortex may also reflect the experience of mental ease reported after traditional hypnotic induction procedures. Reflecting the heterogeneity of function that characterizes the ACC, a further distinction between the central correlates of absorption and relaxation is that though both are associated with increases in activity in this area, the peak observed with relaxation is more posteriorly located.

Increases in activity in motor and premotor areas have previously been associated with voluntary muscular relaxation, and the Rainville *et al.* (2002) study also found strong relaxation-related increases in the precentral gyrus, with reciprocal decreases in somatosensory areas (S1, S2 and insula). There were also relaxation-related increases in activity in occipital areas. Similar increases in occipital activation have been reported previously with 'hypnosis' (e.g. Maquet *et al.*, 1999; Rainville *et al.*, 1999), and what the present study suggests is that this may be related to hypnotic relaxation, or other ongoing cognitive activity, rather than to absorption, which as I noted above is associated with a reduction in activation in occipital areas. A number of important general points emerge from this study. One is that though absorption and relaxation were significantly correlated, the variance in absorption was largely independent of relaxation, indicating that when a hypnotic induction procedure is used that includes suggestions for relaxation, the two processes co-exist but are potentially independent. This raises the question of whether either or both of these can be considered core features of 'hypnosis' as a state. The fact already noted that some hypnosis induction procedures do not involve physical relaxation (active alert hypnosis) clearly suggests that physical relaxation is not an essential component.

This would also be indicated by the fact that individuals can become physically active even following a relaxation-based hypnotic induction without seeming to become de-hypnotized. This nevertheless leaves open the possibility that mental relaxation (or ‘mental calming’) is a component of the hypnotic state after an active alert induction as well as after a more traditional relaxation-based induction procedure. There appears to be no direct evidence to address this specific question, and the scale used by Rainville *et al.* (2002) did not overtly distinguish physical from mental relaxation, though it was probably biased towards mental relaxation or mental calming. Clinical observation, however, would suggest that hypnotized individuals can experience mental agitation without apparently becoming de-hypnotized. This may suggest that even mental calming is not an essential component of the hypnotic state. This leaves absorption as a prime contender.

Whatever the final resolution of this particular question will be, it seems clear that following an induction procedure with relaxation instructions, the effects of relaxation and absorption seem in many ways to be in conflict. They appear to create an internal tension, requiring a balance between increased attention, arousal and mental focusing associated with absorption and decreases in these activities with relaxation. Nevertheless, it is reasonable to conclude that they may jointly or individually be precursors of other hypnosis-related changes such as a reduced tendency to judge, monitor and censor incoming information or mental events, the suspension of usual orientation to time, location and sense of self and, under some circumstances, the experience of responses as automatic or extra-volitional. Relevant to the last of these is the fact that in other studies a sense of agency has been associated with activity in right inferior parietal cortex, precuneus and somatosensory cortices, and these are also areas that show consistent changes in activity following hypnotic induction procedures. It is not clear whether these changes are the product of being hypnotized *per se* or are the results of suggestions embedded in the induction procedure, though it is clear that some of them at least can be produced by specific suggestions relating to

the experience of passive movement in hypnosis (Blakemore *et al.*, 2003).

In another study investigating the possibility of an altered background brain state following hypnotic induction, Deeley *et al.* (2007c) used fMRI to compare brain activity before hypnosis (pre-hypnosis), after a hypnotic induction (hypnosis) and following reversal of hypnosis (post-hypnosis) when participants were carrying out a nondemanding visual task (passively attending to a flashing checkerboard display). The participants were eight medium to high hypnotizable volunteers (HGSHS:A scores >7). The hypnotic induction procedure was based on Gruzelier’s three-step model (Gruzelier, 1998) of hypnotic induction and included both relaxation suggestions and special place imagery (Oakley *et al.*, 2007). Subjective hypnotic depth measurements were taken from the participants on a 10-point scale (Oakley *et al.*, 2007) before and after the checkerboard display in each of the three conditions (pre-hypnosis, hypnosis and post-hypnosis). These measures confirmed that hypnotic depth remained stable over the time that each display was presented and also that hypnotic depth was greater in the hypnosis condition compared with the pre-hypnosis and post-hypnosis conditions. There was no significant difference, however, between the pre- and post-hypnosis conditions, indicating that hypnosis had been effectively reversed following the hypnosis condition.

Correlational analyses were conducted between brain activity and hypnotic depth. These showed that increasing hypnotic depth was associated with increased activity in lateral prefrontal regions previously shown to be involved in working memory and the maintenance of attention (bilateral middle prefrontal gyrus, bilateral inferior frontal gyrus and right precentral gyrus). Increasing depth of hypnosis was also associated with reduced activity in left medial frontal gyrus, bilateral parahippocampal gyri and left posterior cingulate gyrus. These areas have been identified across a variety of neuroimaging paradigms as components of a ‘default mode’ network of normal brain function that is active during ‘rest’ periods when task demands are low (Gusnard and Raichle, 2001). Subjectively, this normal default mode is characterized by spontaneous

task-independent thought, episodic memory, semantic processing and self-awareness. The observed pattern of activations is consistent with a view that the 'default mode' in hypnosis is different from that in a nonhypnotized state, and in particular that it is characterized by a reduction in spontaneous conceptual thought. Increasing depth of hypnosis was also accompanied by reduced activity in thalamus, pons and medulla, which are areas associated with mediating arousal and alertness, possibly reflecting an increase in relaxation and 'mental calmness' in the hypnosis condition.

Consistent with the observed changes in brain activation, visual analog scale (VAS) scores taken from the participants revealed that, compared with when they were not hypnotized, the hypnosis condition was associated with significant increases in both relaxation and absorption and significant decreases in distraction, the tendency to analytical thought and the feeling of their minds being 'cluttered up'. From these observations it seems that 'neutral' hypnosis (or 'trance') is characterized by a default mode of brain functioning that is different from that encountered in individuals under the same conditions without a hypnotic induction and that the brain activity observed is congruent with subjective states typically reported by hypnotized individuals.

One of the brain areas associated with both relaxation and absorption in the Rainville *et al.* (2002) study was ACC, which among other functions has been associated with 'conflict resolution'. Egner *et al.* (2005) used a combination of fMRI and EEG (electroencephalogram) coherence to measure the effects of hypnotic induction on conflict monitoring and cognitive control processes using the Stroop procedure to manipulate levels of cognitive conflict in an ongoing task. In addition to ACC, interest was focused on left lateral frontal cortex, which has been identified as being involved in cognitive control processes that co-vary with conflict monitoring. The specific proposal Egner *et al.* (2005) were testing was that though highly hypnotizable individuals show good attentional capacities compared with low hypnotizables in no-hypnosis conditions, their attentional capacities, as evidenced by enhanced Stroop interference, are significantly altered following a

hypnotic induction procedure. In particular they hypothesized on the basis of earlier evidence that a hypnotic induction procedure in the absence of any suggestions aimed at altering attentional performance would result in a decoupling of conflict monitoring processes (mediated by ACC) without a compensatory increase in cognitive control (mediated by left lateral prefrontal cortical areas).

To investigate this hypothesis, two groups of volunteer participants were selected on the basis of their HGSHS:A and SHSS:C scores as being of high ($n = 11$, scores on both scales 9 or higher) or low ($n = 11$, scores on both scales 3 or less) hypnotic susceptibility. Both groups were tested in the fMRI scanner before and after a hypnotic induction procedure (that excluded references to relaxation, heaviness or sleep) while performing a word/color Stroop task involving varying degrees of response conflict. Importantly, no suggestions were given that related to performance on the Stroop task. The main findings were that conflict-related activity during the Stroop task increased in ACC from baseline to hypnosis in the highly hypnotizables, but not in the low hypnotizables, resulting in higher overall levels of conflict-related activity in the high hypnotizables than the low hypnotizables following the hypnotic induction. Cognitive control-related activity in left frontal cortex, however, did not show any systematic changes due to either the hypnotic induction procedure or the hypnotic susceptibility of the participants. Given the well-established finding in other (nonhypnosis) studies that increased conflict-related ACC activation is normally associated with a compensatory increase in cognitive control, Egner *et al.* (2005) interpreted their own results as indicating a decoupling of the normal relationship between conflict monitoring (ACC) and cognitive control functions (left lateral frontal cortex) following a hypnotic induction procedure in highly hypnotizables. This interpretation was supported by EEG data collected in a parallel study that showed decreased gamma band coherence between frontal midline and left lateral scalp sites in the highly hypnotizables. Other than the task-related changes in ACC, it is interesting that they found no hypnosis-related changes in any other brain regions.

Overall, Egner *et al.* (2005) concluded that their data were more compatible with the view that hypnosis *per se* (i.e. ‘trance’) in highly hypnotizable individuals is associated with impairment in some aspects of attentional processing rather than with the global increase in focusing of attention that has been commonly assumed. It remains to be seen whether the effects of hypnotic induction on the relationship between conflict monitoring and cognitive control functions are typical of all hypnosis inductions and test situations or are specific to this particular induction procedure or to being tested on a Stroop task. It is significant that the effects were produced using an induction procedure that did not include relaxation suggestions—which may indicate that it is the absorption (or at least nonrelaxation) component of ‘hypnosis’ that is responsible for the changes observed in attentional processing. This study is relevant to that of Raz *et al.* (2005), described in the instrumental hypnosis research section above, in that both clearly found changes in ACC activity that corresponded to hypnosis-related changes in conflict monitoring. The Raz *et al.* study, however, involved a *reduction* in Stroop interference in high hypnotizables after a hypnotic induction procedure. This was produced by a specific suggestion intended to reduce or to remove the cognitive conflict from the Stroop presentation rather than by over-riding any decoupling of the relationship between conflict monitoring and cognitive control functions. It is perhaps significant nevertheless that the effect in the Raz *et al.* (2005) study was achieved by a post-hypnotic suggestion and thus was demonstrated after the hypnosis condition had been terminated. It could be hypothesized on the basis of the evidence from the Egner *et al.* (2005) study that the reduction in Stroop interference would be easier to achieve by the use of post-hypnotic suggestion that operates when the individual is in a nonhypnotized state than it is when the suggestion is to be acted upon during the hypnotic condition when the individual’s susceptibility to Stroop interference has been increased by induction-related changes in attentional processing. There is at present no direct evidence that could answer this question as all of the hypnosis studies demonstrating a suggestion-related

reduction in Stroop interference, with the exception of a single case study reported by MacLeod and Sheehan (2003), appear to have used post-hypnotic suggestion to achieve the effect.

Considering these studies as a whole, it is important to bear in mind that with the exception of Egner *et al.* (2005), the induction procedures used have included relaxation suggestions. Nevertheless, a growing case can be made that there is a distinct steady-state change attributable to a traditional hypnotic induction procedure, relating to alterations in attentional processes, spontaneous conceptual thought, feelings of absorption, relaxation and mental calm following a hypnotic induction procedure that might be considered to correspond to a state of ‘neutral’ hypnosis. The relationship between this mental state and suggestion is not clear, although the study reported by Derbyshire *et al.* (2007) in the previous section indicated that there is a difference in associated brain activity when the same suggestions are given following a hypnotic induction procedure and when they are given without it.

14.4.5. Effects of trance on sensory and motor processes

There is very substantial and convincing evidence from the studies reviewed above that specific suggestions given after a hypnotic induction have a significant effect on the processing of both sensory and motor information. If it is possible, as indicated in the previous section, to identify a mental state change (trance) that is produced by hypnotic induction procedures, a further question relates to the possibility that this change in turn affects sensory or motor processing in the absence of specific suggestions intended to alter these processes. This is a significant question, not least from the perspective of instrumental hypnosis studies where it is important for experimenters to know if the hypnosis condition itself alters brain processes over and above the effects of the specific suggestion they are using to manipulate the phenomenon of interest to them, particularly if they wish to extrapolate from the results observed in hypnosis to nonhypnotic contexts. There are a number of incidental observations from the

neuroimaging studies already reviewed here that bear on this point and indicate that ‘neutral hypnosis’, or trance, does not affect normal sensory and motor brain processes. Rainville *et al.* (2002), for example, noted that of the two components of hypnosis they monitored, neither relaxation nor absorption correlated with pain ratings, and concluded that ‘pain was not altered by hypnosis alone’. This observation is also relevant to the interpretation of studies I reviewed above on the analgesic effects of ‘hypnosis’ (Faymonville *et al.*, 2000, 2003; Schultz-Stubner *et al.*, 2004) and reinforces the conclusion that the effects produced on pain processing depend on implicit suggestions or mental tasks embedded in the induction procedure rather than on ‘hypnosis’ *per se*. Kosslyn *et al.* (2000) noted in their PET color processing study that veridical viewing [of the visual stimuli] in both the hypnosis and no hypnosis conditions was associated with increased activation in color processing (fusiform) areas of visual cortex for the color stimuli compared to gray scale stimuli on both sides of the brain. More specifically, they noted that analysis of activity in these brain areas (left and right fusiform region) under veridical viewing conditions revealed no significant effects that could be attributed to ‘the state of being hypnotized’ and defined their areas of interest by pooling ‘veridical viewing’ data from the hypnosis and no-hypnosis conditions.

Nonimaging studies involving hypnosis have similarly commented in passing on the absence of differences in sensory and motor processes in the absence of suggestions. In a study of hypnotically induced anomalous motor control experiences, for example, Haggard *et al.* (2004) included a comparison of perceived voluntariness of movement when the index finger of the participants’ right hand was either moved voluntarily or was passively moved by the apparatus both before and after a hypnotic induction procedure. They found no significant main effects of hypnosis for perceived voluntariness for either type of movement, and concluded that ‘hypnosis by itself did not therefore produce feelings of passivity’ (p. 650). It is also relevant to note here that though Egner *et al.* (2005) found spontaneous changes in some attentional control processes following their hypnotic induction procedure, they reported that ‘no background accompaniment of hypnosis was detected

elsewhere in the brain’ (p. 976). This latter observation is consistent with the conclusion that the basic sensory and linguistic processing associated with carrying out the ongoing Stroop task was not affected by the induction of hypnosis *per se*.

In a recent study that has explored this issue directly, Deeley *et al.* (2007b) reported brain activity (fMRI) during the processing of an auditory stimulus (random spoken words) and a visual stimulus (a flashing checkerboard display) before hypnosis, following a hypnotic induction and after termination of hypnosis. There were eight participants (HGSHS:A >7) and the hypnosis procedure involved relaxation suggestions and special place imagery (Gruzelier, 1998; Oakley *et al.*, 2007). No significant differences were found in brain activity associated with processing visual information in any of the three conditions. There were, however, increased activations in left-sided auditory cortical areas during hypnosis compared with the no-hypnosis conditions. The authors concluded that their data were consistent with the view that a hypnosis induction *per se* does not directly affect sensory processing but that implicit suggestions or task demands embedded in the particular hypnotic induction procedure employed could have such an effect, as appeared to be the case for their auditory processing task.

It seems reasonable to conclude on the evidence available so far that trance or hypnosis *per se* in the absence of specific targeted suggestions (‘neutral’ hypnosis) does not alter the basic processing of sensory and motor events.

14.5. Future research directions and implications for hypnosis

The most comprehensive evidence to emerge from this review is that suggestions following a hypnotic induction procedure can produce profound changes in the reported experience of pain (Erslund *et al.*, 1996; Rainville *et al.*, 1997; Wik *et al.*, 1999; Willoch *et al.*, 2000; Derbyshire *et al.*, 2004; Raij *et al.*, 2005), volition and motor control (Halligan *et al.*, 2000; Blakemore *et al.*, 2003), conflict monitoring (Raz *et al.*, 2005), catalepsy (Grond *et al.*, 1995), color processing (Kosslyn *et al.*, 2000) and auditory hallucinations

(Szechtman *et al.*, 1998), and that these are accompanied by corresponding changes in brain activity. Similarly, providing hypnotized participants with suggestions or instructions related to particular cognitive tasks such as the reliving of positive autobiographical events (Maquet *et al.*, 1999; Faymonville *et al.*, 2000, 2003) and guided imagery experiences (Schultz-Stubner *et al.*, 2004) produces subjective effects, including spontaneous experiences of analgesia in some studies, that again are accompanied by congruent brain activation changes. There is also some preliminary evidence that the suggested effects are mediated differently in brain terms than when individuals are feigning the same phenomenon (Ward *et al.*, 2003). Taken as a whole, these data confirm that suggested phenomena are in a very clear sense 'real'.

What remains unclear from all of these studies, however, is whether or not the induction of 'hypnosis' via a formal induction procedure is necessary to the production of the suggested phenomena in question. Indeed, as noted earlier, there is good evidence from the nonimaging literature to indicate that these suggested effects can be produced without a hypnotic induction. More specifically, even within the studies mentioned in this review there is evidence that at a subjective and behavioral level there appears to be no difference in the reported reduction in Stroop interference (Raz *et al.*, 2006) or in fibromyalgia pain reduction (Derbyshire *et al.*, 2007), irrespective of whether the suggestions were given with or without a hypnotic induction procedure. Interestingly, however, the Derbyshire *et al.* (2007) study indicated that despite the lack of reported differences in subjective pain levels produced by suggestion with and without hypnosis, there was a difference between the two conditions in the degree of control the participants felt they could exert over their pain and also in the accompanying brain activations. It is crucial for our understanding of what role, if any, the hypnotic induction procedure plays in mediating suggested changes to conduct neuroimaging studies that directly compare the effects of exactly the same suggestions with and without a hypnotic induction, ideally in the same session in the same individuals. It would be especially instructive to compare groups of low and high hypnotizables under these conditions. Irrespective of these

considerations, it remains the case that suggestion following a hypnotic induction procedure provides us with a valuable and reliable tool for the creation and removal of phenomena of interest in cognitive neuropsychology.

There are few studies that have used neuroimaging to explore the possibility that a hypnotic induction procedure in the absence of specific suggestions may produce a stable background state (or 'trance') that may account for any unique effects on experience, brain function or subsequent responses to suggestion that may be attributable to hypnosis *per se* (or 'neutral hypnosis'). Those that have attempted this have typically engaged the participants in both hypnosis and no-hypnosis conditions in a cognitively undemanding task such as passively experiencing levels of heat stimulation (Rainville *et al.*, 1999, 2002) or patterned visual stimulation (Deeley *et al.*, 2007a), though one study has involved the Stroop task to create a cognitive conflict in both conditions to explore predicted changes in attentional processing that should accompany the hypnosis condition but not the no-hypnosis condition (Egner *et al.*, 2005).

Rainville *et al.* (1999, 2002) found patterns of brain activation associated with the hypnosis condition that were consistent with increased visual imagery, engagement of attentional networks, increased internal focus of attention and reduction in general body sense awareness. More specifically, the second of these studies was able to determine which aspects of these activation patterns were attributable to an absorption component of the hypnotic experience and which were related to reported relaxation. Increased activations associated with absorption were seen in brain areas comprising an executive attentional network associated with alertness and with maintaining cortical arousal. In addition, there were absorption-related activation increases in brain areas involving more specialized executive attentional processes with a role in error detection and conflict monitoring. Reductions in activity associated with absorption were indicative of disengagement from external sources of stimulation, particularly vision and the monitoring of external space and time. The relaxation component was involved in decreases in activation in brain areas associated with cortical arousal and wakefulness,

and increases in areas associated with voluntary muscle relaxation. Interestingly, the increase in activity in posterior visual cortical areas reported in other studies to be related to the 'hypnosis' condition (e.g. Maquet *et al.*, 1999) was found to be associated with the relaxation component of the hypnotic experience.

In another study intended to compare directly the brain activity associated with hypnosis with a matched no-hypnosis condition, Deeley *et al.* (2007a) described greater activation in the 'hypnosis' condition in areas associated with working memory and the maintenance of attention, similar to the absorption-related changes described by Rainville *et al.* (2002), and reductions in areas mediating arousal and alertness, corresponding to relaxation-related changes. In addition, Deeley *et al.* (2007a) described reductions in activity that have been claimed to characterize a 'default mode' of brain activity seen during rest periods in neuroimaging studies when task demands are low and the participant is engaged in spontaneous task-unrelated thought and other task-independent mental processes. This latter observation is consistent with participants' reports that in addition to feelings of mental absorption and relaxation, they experienced a reduction in spontaneous conceptual thought in the hypnosis condition.

The Rainville *et al.* (1999, 2002) and Deeley *et al.* (2007a) studies used traditional hypnotic induction procedures that incorporated instructions or suggestions for relaxation, and seem to indicate that these procedures are accompanied by consistent patterns of brain activation that are congruent with the subjective reports that participants typically give of their hypnotic experience. This provides support for the view that the effects of hypnotic induction procedures are 'real' though not outside what would be expected from what is known of normal brain functioning. In the latter sense, the hypnotic 'state', depending on the induction procedures used, appears to be a relatively mundane reflection of what would be expected in an individual experiencing attentional absorption, physical relaxation and/or mental calming and a reduced tendency to engage in spontaneous conceptual thought.

A somewhat different approach was adopted by Egner *et al.* (2005), first in that their hypnosis

procedure did not include relaxation suggestions, and secondly in that they investigated the possibility of spontaneous changes within attention processes that had been hypothesized as the consequence of a hypnotic induction procedure in previous research using the Stroop task. Using a combination of fMRI and EEG techniques, they found that, as predicted, the hypnotic induction procedure in high hypnotizables created an apparent decoupling of the normal linkage between conflict monitoring and the normal cognitive control processes that provide a compensatory mechanism, with the result that Stroop performance deteriorated in their highly hypnotizable subjects following the induction procedure. This is a particularly interesting result in that it points to a change in mental processing, with corresponding alterations in brain activity, which would not be easily predictable simply from the subjective reports of participants of their hypnotic experience unless revealed by the particular cognitive probe.

Aside from the question of whether the hypnotic induction procedure produces an identifiable mental 'state' independently of specific suggestions to alter particular mental processes is that of whether more basic aspects of information processing remain essentially 'normal' or are altered by the immediate consequences of the hypnotic induction procedure. The evidence summarized in the final section of this review indicates clearly that the perception of pain (Rainville *et al.*, 2002), the processing of sensory information (Kosslyn *et al.*, 2000; Egner *et al.*, 2005; Deeley *et al.*, 2007b) and the sense of agency over our action (Haggard *et al.*, 2004) are not affected by the induction of 'hypnosis' *per se*. This again is important for those who wish to use suggestion following a hypnotic induction procedure alongside neuroimaging techniques as a means to produce discrete subjective and behavioral changes in a single cognitive capacity or function and to investigate the brain activity changes that are uniquely associated with it.

This is an appropriate point to review the list of candidates for components of hypnotic states suggested by Price and Barrell (1990) and Rainville and Price (2003, 2004) in the light of the present review. The components they suggested were: focused attention, absorption,

relaxation, a sense of automaticity and altered experiences of self-agency. Though as a personality trait absorption correlates only weakly with the trait of hypnotizability, especially when the effects of context are taken into account (see Milling *et al.*, 2000), absorption remains a strong contender as a core feature of the experience of 'hypnosis' *per se*. There is some overlap between the notion of focused attention and absorption, and some aspects of focused attention, such as its inward focus, again seem to be central to the hypnotic experience. It is important, however, to recognize that the hypnotic induction procedure does not simply enhance attentional capacities, as some aspects of attention such as the linkage between conflict monitoring and cognitive control processes appear to be weakened. Relaxation is also a common feature of individual reports of trance experience, and there is good evidence to suggest that it is a distinctive component of the experience when it is present. It is less clear if relaxation is a core component of hypnosis *per se*, however, as the standard hypnotic induction routines typically include suggestions or instructions intended to produce relaxation. It seems well established in fact that physical relaxation is not essential for the induction of hypnosis, though it remains possible that mental relaxation (or mental calming) may be present, perhaps as a consequence of absorption and a more inward focus of attention, even when the induction procedure does not actively include relaxation instructions. Such evidence as there is in relation to the sense of involuntariness or loss of the sense of self-agency is that they can be created by suggestions following an induction procedure but may not occur spontaneously when, for example, motor actions are carried out in hypnosis. Nevertheless, a sense of lack of spontaneity, or reduction in feelings of self-agency, may characterize the feelings in resting states in hypnosis when task demands are low, much as the inclination to spontaneous conceptual thought also seems to diminish. A number of studies have identified enhanced visual imagery following an induction procedure, which was not on the original list of candidates, though this seems to be related to the relaxation component of the hypnotic experience rather than to absorption.

Apart from changes such as physical relaxation, mental calming, attentional absorption and a reduction in spontaneous conceptual thought that are associated with the experiential state of hypnotic 'trance', or the feeling of being 'hypnotized', the only fundamental change in mental processing that has been demonstrated so far in neuroimaging studies as a consequence of a hypnotic induction procedure *per se* is the apparently spontaneous disconnection of conflict monitoring and cognitive control described by Egner *et al.* (2005).

There are a number of more general issues that arise from the studies I have considered. A major question concerning the very clear subjective and brain activity changes that have been shown to accompany specific suggestions following a hypnotic induction procedure is the extent to which these suggested changes are dependent on the induction of 'hypnosis' or whether the same effects would follow from the same suggestions given without a hypnotic induction. Relevant studies to address this question have only recently been initiated. The little evidence we have so far indicates that although the subjectively reported effects of suggestion under both conditions may be very similar (e.g. McConkey *et al.*, 2001; Raz *et al.*, 2006; Derbyshire *et al.*, 2007), there may be differences in the time that the effect is experienced (McConkey *et al.*, 2001) and in the way that these changes are represented at the level of brain activity (Derbyshire *et al.*, 2007). A somewhat related issue is whether different types of suggestion are mediated in different ways and whether these differences may be accompanied by distinct brain processes over and above those associated with the execution of the particular suggested effect *per se*. For example, the 12 items on the HGSHS:A (Shor and Orne, 1962) have traditionally been divided into three distinct types (ideomotor, challenge and perceptual-cognitive), and more recent analyses have suggested four (Woody *et al.*, 2005; see also Woody and Barnier, Chapter 10, this volume). That individuals vary in the number of suggestions they respond to in the various categories raises the question not only of whether hypnotizability itself is a unitary trait, or is composed of a series of component traits, but also of whether responding to the different types of suggestion contained in HGSHS:A may require

different underlying cognitive strategies whether hypnosis is present or not (see Woody and Barnier, Chapter 10; Benham and Younger, Chapter 15, this volume). It seems clear that these areas deserve more extensive exploration.

Another question alluded to above that has potential relevance to the mechanisms by which suggestions are mediated, but is particularly relevant to an understanding of the effects of the induction procedure itself, is the extent to which any of the changes that have been described as components of the ‘trance’ state are products of the particular hypnotic induction procedure used. The majority of neuroimaging studies to date have used a hypnotic induction procedure that includes instruction or suggestions for relaxation. As we noted earlier, there is ample evidence from outside the neuroimaging literature that physical relaxation at least is not a prerequisite for the demonstration of classic hypnotic phenomena—though mental calming may be a common attribute of both active-alert and relaxation-based hypnotic procedures. The one neuroimaging study that has separately analyzed the absorption and relaxation components of a classic ‘relaxation’ induction (Rainville *et al.*, 2002) identified them as co-occurring but independent, and even in some sense opposing, elements of the hypnotic experience, which have distinct patterns of brain activity associated with them. It would be instructive to compare directly the brain activity following traditional relaxation-based induction procedures with matched active-alert procedures.

There are other interesting questions that remain to be asked via neuroimaging techniques such as when we would expect the ‘hypnotic state’ to be manifest. The ‘trance’ effect of a hypnotic induction procedure, or ‘neutral hypnosis’, has been portrayed here as a ‘tonic’ change, a background state or ‘default mode’ shift that is created by the induction procedure. One question is whether this tonic change persists during enactment of specific suggestions. That is, do the effects of suggestion ‘over-ride’ the background hypnotic state or are they superimposed on it? Conversely, are there effects of the hypnotic induction procedure that are only manifest at the point at which a suggestion is acted upon? In this case, we might consider some components of the hypnotic state to be

‘phasic’. A further question is whether ‘latent’ suggestions alter the ‘tonic’ consequences of the induction procedure. That is, is the hypnotic ‘default mode’ itself altered once a suggestion (e.g. for limb paralysis) has been given or are the induction-related effects only manifest as the effect of the suggestion is tested by the individual (when they try to move the affected limb)? Do these suggestion-related effects vary according to the type of suggestion that is to be enacted (e.g. ideomotor versus challenge) over and above its specific content? These questions can only be answered by systematic comparison of activation in the relevant conditions.

With the single exception of the Raz *et al.* (2005) study, all the hypnosis-related neuroimaging studies reviewed here have studied the effects of either hypnosis *per se* or hypnosis plus suggestion within the hypnotic state. Raz *et al.* (2005) studied an effect produced by post-hypnotic suggestion; i.e. a suggestion that was given following a hypnotic induction for an effect to be observed after hypnosis had been terminated. This interesting strategy raises an immediate question as to whether a hypnotic state or some component of it is reinstated during the enactment of a post-hypnotic suggestion or does the ‘suggestion’ then act alone? In other words, does the brain state at the time a post-hypnotic suggestion is carried out correspond to that seen during the enactment of a suggestion given in a no-hypnosis condition—or does it still bear some trace of its ‘hypnotic’ ancestry? Again this raises a number of interesting questions that will need to be addressed by future studies. As a final general comment, the majority of the studies reviewed above used highly hypnotizable individuals as participants—this in itself is not a serious problem for instrumental studies though it may limit some of the generalizations that can be drawn from them. The use of participants across the whole range of hypnotizability or the use of low hypnotizables as control groups in intrinsic hypnosis studies using neuroimaging, however, would greatly extend our understanding of the mechanisms both of hypnosis *per se* and of suggestion.

On the evidence so far it seems clear that suggestion given after a hypnotic induction is an effective and reliable tool for use in mainstream neuropsychological research, particularly in

conjunction with neuroimaging techniques. There also seems to be clear evidence of its potential utility in the field of experimental psychopathology, in creating analogs of clinical conditions such as conversion disorders, chronic pain conditions and disorders of volition and motor control (Oakley, 2006). As hypnosis becomes more established as a research technique, this should enable more work to be carried out using neuroimaging to explore the nature of hypnosis itself and the mechanisms underlying suggestion effects both within and outside hypnosis. This in turn will have clear implications for the use of hypnosis and suggestion in clinical practice.

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CHAPTER 15

Hypnosis and mind–body interactions

Grant Benham and Jarred Younger

15.1. Introduction

Truth is nothing but a path traced between errors.

Franz Anton Mesmer (1799)

In 1784, the Royal Commission of King Louis XVI determined that claims of the health-enhancing properties of animal magnetism were not in and of themselves false (Franklin *et al.*, 2002). Indeed, they recognized and specifically mentioned the potential for imagination and focusing one's attention on internal processes to effect physiological change. What they challenged, as a result of numerous erudite experimental studies, was Mesmer's claims about the *mechanism* by which these cures were achieved: the forces of animal magnetism (Mesmer, 1980). The Commission's report dealt a devastating blow to Mesmer's popularity and severely weakened this early construal of hypnosis. But it established the need for such extraordinary claims to be supported by level-headed empiricism.

The history of hypnosis is rich in its examination of mind–body interactions. Early reports of mesmeric cures extolled its ability to heal physical illness, psychosomatic disorders were analyzed and treated through hypnotic sessions, and subsequent papers provided numerous examples of its promise for reducing surgical

and other forms of pain. As technology evolved, researchers also became increasingly well equipped to study the physiological concomitants of both the hypnotic state and hypnotic suggestions. The nature of the physiological basis of hypnosis has mutated over time, arguably as a result of the particular zeitgeist surrounding medical disease (animal magnetism, organ theories such as hysteria, nerves and electrical impulses). Today, researchers are increasingly aware of the complexity and interconnectedness of systems of the human body and have targeted the brain as the central player in understanding hypnotic phenomena. Throughout these changes, the notion that hypnosis is a powerful healing force has stood the test of time.

In attempting to address the issue of hypnosis and mind–body interactions, we present a summary of research on the potential for hypnosis to alter physiological processes in response to hypnotic suggestions. Such research has been increasingly embraced by clinicians and researchers as ongoing investigations demonstrate the impact of psychological states on health. Even as psychodynamic interpretations were succeeded by biomedical models and psychoneuroimmunological or psychoneuroendocrinological explanations of these mind–body interactions, the notion of the inseparability of 'mind' and 'body' remained strong.

As research programs demonstrate the negative impact of stress on the body, parallel lines of research have examined whether the potential exists to direct our own physiology in a positive way through techniques such as hypnosis, meditation, biofeedback, relaxation therapy or imagery. These approaches share a common goal of controlling biological processes through various psychological procedures. This notion of being able to self-direct physiology has been given the term ‘cyberphysiology’ from the Greek ‘*Kybernan*’ which means ‘to steer’ (e.g. Hall *et al.*, 1992a; Culbert *et al.*, 1994). A variety of cyberphysiological approaches exist, but there are many instances in which the boundaries between the various cyberphysiological strategies are ill-defined. As we will see later in this chapter, underlying commonalities between hypnotic and other cyberphysiological procedures can create problems for those wishing to ascribe exclusive benefits to hypnosis.

In limiting our chapter to the above-mentioned focus, we have excluded certain topics that are arguably linked to the notion of hypnosis and mind–body interactions. First, while we do include some studies that reference treatment of ostensibly psychosomatic disorders, we do not specifically examine the role of hypnotizability in the *development* of somatic or psychosomatic disorders. Wickramasekera (1986) proposed a high risk model of threat perception in which individuals scoring at the extremes of hypnotizability (low and high hypnotizables) are more likely to develop illness than those with average hypnotizability. According to this model, high hypnotizables may reach this state of poor health through a process of amplification of symptoms, whereas low hypnotizables are more likely to postpone seeking treatment due to repression of explicit perception of their symptoms (thereby ultimately presenting with more serious psychophysiological disorders). More recent research (Younger *et al.*, 2007) supports the notion that high hypnotizables are likely to report a greater number of psychosomatic complaints. Therefore, the trait that may enable these individuals to respond more effectively to hypnotic treatments may, ironically, make them more prone to develop the health conditions in the first place.

Second, there is a large body of literature that has examined the physiological correlates of

the hypnotic state. Early investigations in this area were restricted by the limited technologies available such as cardiovascular, respiratory and electrodermal measures (e.g. Estabrooks, 1930; Wible and Jenness, 1936; Jenness and Wible, 1937; Nygard, 1939; Barber and Coules, 1959; Barber and Hahn, 1963; Fehr and Stern, 1967; Jana, 1967; Cade and Woolley Hart, 1971; Paradis, 1971; Mather and Degun, 1975; Tebecis and Provins, 1976). Development and refinement of the electroencephalogram enabled researchers to examine the brain states associated with hypnosis (Loomis *et al.*, 1936; Barker and Burgwin, 1949; Rizzo *et al.*, 1980; Sabourin, 1982; Meszaros and Szabo, 1999; Rainville *et al.*, 1999; Williams and Gruzelier, 2001), and such research has continued as neuroimaging technologies evolved to include sophisticated positron emission tomography (PET) and functional magnetic resonance imaging (fMRI; e.g. Maquet *et al.*, 1999). While the search for consistent alterations in cortical activity associated with the hypnotic state has proved unfruitful, recent studies have suggested some consistent alterations in regional cerebral blood flow following the hypnotic induction; changes that do not appear to be related to simple peripheral physiological relaxation (Rainville *et al.*, 1999, 2002). A more comprehensive analysis of past and current research on cortical activity and the hypnotic state is provided by Barabasz and Barbarasz in Chapter 13 and by Oakley in Chapter 14 (this volume).

Chapters 13 and 14 cover a third area of research that is also excluded from the current chapter, namely research on the brain states associated with specific hypnotic suggestions. Recent studies, for example, have demonstrated alterations in brain activity following hypnotic suggestions for visual and auditory hallucinations (Spiegel *et al.*, 1985; Szechtman *et al.*, 1998; Barabasz *et al.*, 1999; Kosslyn *et al.*, 2000), paralysis (Halligan *et al.*, 2000; Ward *et al.*, 2003) and analgesia (Crawford *et al.*, 1993; Hofbauer *et al.*, 2001).

Lastly, we omit studies that examine the potential for hypnosis to influence perception, such as investigations of hypnotic deafness or blindness (Kramer and Tucker, 1967; Scheibe *et al.*, 1968; Spanos *et al.*, 1982a, 1991, 1992; Bryant and McConkey, 1989a,b, 1990a,b,c).

While one can reasonably assume that alterations in perception are accompanied by a certain level of physiological shift, this assumption is not commonly put to the empirical test; studies in this area have generally relied on self-report of perceptual alterations without assessment of changes in physiology. We leave detailed coverage of these important areas (cortical activity associated with the hypnotic state and specific hypnotic suggestions and hypnotically produced perceptual alterations) to other chapters of this book. Instead, we focus on the use of hypnosis in cyberphysiological research; on the potential for hypnotic suggestions to ‘steer’ or direct physiology.

Hypnotic cyberphysiological research has some advantages over other areas of hypnosis research. One of the critiques of studying hypnotic behavior is that it can be readily faked and that the observed changes in behaviors may therefore have nothing to do with hypnosis, *per se*. Around the 1930s there was increased focus on psychosomatic medicine, but researchers were progressively more aware that hypnotic phenomena such as catalepsies and post-hypnotic suggestions could be elicited without hypnotic inductions (Sarbin, 2005). Researchers therefore began to focus their studies on the effects of hypnotic suggestions on physiological processes, processes that at face value could not be altered voluntarily. Although certain studies (Kinnunen *et al.*, 1994) and methodologies (Orne, 1971) have attempted to invalidate the argument that subjective self-report or enacted behavior are intentionally faked, the study of alterations in physiology largely side-steps the issue. Given that the changes in physiology are not readily controlled, how *could* an individual ‘fake’ their response? Thus hypnotic cyberphysiological research avoids some of the social compliance critiques that still plague other areas of hypnosis research. However, as we will examine later in the chapter, establishing the central role of hypnosis in eliciting cyberphysiological changes faces its own share of challenges.

Ours is not the first attempt to summarize the literature on this topic. In 1961, T. X. Barber published a paper detailing and discussing the findings from a number of studies examining the potential of hypnosis to alter physiological functioning (Barber, 1961). He followed up this review with an updated paper in 1965 and again

in 1984 (Barber, 1965, 1984). Similar summaries have been prepared by others (e.g. Sarbin, 1956), and more recent reviews have focused on the use of hypnosis in medicine or for psychosomatic disorders (e.g. Pinnell, 2000; Heap and Aravind, 2002; Stewart, 2005). Additionally, a number of review papers have been published on individual topics or conditions, such as immune function (Hall, 1982, 1989; Goldberg, 1985; Miller and Cohen, 2001; Gruzelier, 2002; Neumann, 2005), allergies (Wyler-Harper *et al.*, 1994), asthma (Hackman *et al.*, 2000), dermatology (Shenefelt, 2000, 2003), warts (DuBreuil and Spanos, 1993) and gastrointestinal disorders (Lackner *et al.*, 2004; Soo *et al.*, 2004; Gonsalkorale and Whorwell, 2005; Solloway, 2005). However, we believe the current chapter represents the most comprehensive and contemporary assessment of this important topic. A large proportion of published papers in this area have been single case reports which, while largely descriptive and lacking in generalizability, have served the field of hypnosis well: consistently supplying a rich supplement to empirical research and frequently acting as the catalyst for later experimentation.

We begin the chapter by presenting a summary of core concepts and questions related to hypnotic cyberphysiological techniques. Following that, we review the literature on hypnosis and the body. This review covers the use of hypnosis both in changing physiological systems and in treating physical symptoms or conditions. We end the chapter with an assessment of the evidence as a whole and offer recommendations for future investigations.

15.2. Core concepts and questions

Hull (1933) observed that research on hypnosis is complicated by:

... the inherent difficulty of the problems involved, the fundamental elusiveness of the phenomena, and the consequent subtlety in the experimental controls. These difficulties are so great that to enter seriously on a program of investigation in this field ... is almost to court scientific disaster (p. 403).

In order to evade ‘scientific disaster’, researchers studying the cyberphysiological potential of hypnosis

must be particularly careful in employing adequate controls, though, as we will discuss, the lack of a solid definition of hypnosis makes this problematic. Even adopted definitions (Green *et al.*, 2005) tend to become amorphous when one attempts to grasp them fully, slipping through the fingers of those who wish to apply scientific rigor to the study of hypnosis.

In establishing the efficacy of hypnotic procedures for altering physiology one must: (1) demonstrate replicable effects in controlled studies; (2) demonstrate that the effects are due to hypnosis and relate to hypnotizability; and (3) demonstrate that the effects are at least as powerful as alternative psychological techniques, particularly those that require less training and/or time to administer. As concluded by Frankel (cited in Pinnell, 2000), ‘How effective is the intervention and what part of it belongs to hypnosis’ (p. 233).

At present, hypnosis researchers are still battling to satisfy the first criterion. While some areas have shown a number of positive findings (e.g. the modulation of delayed-type hypersensitivity (DTH) reactions), they are often challenged by reports of negative results. The lack of consistency may reflect the variety of methods used, particularly in terms of hypnotic procedures employed, the selection of outcome measures and the timing of interventions. As we will show later in this chapter, some treatments (such as the treatment of warts) have shown more consistency. But researchers are then faced with the second issue—establishing the relevance of hypnosis. Below, we examine various conditions for establishing the relevance of hypnosis and then introduce the issue of whether or not hypnosis is any more effective than other psychological techniques.

15.2.1. Establishing the relevance of hypnosis and hypnotizability

Contemporary hypnotic procedures generally incorporate suggestions for relaxation and provide suggestions for alterations in cognition, behavior or physiology. Thus, in order to establish the relevance of hypnosis to cyberphysiological change, one must determine whether or not hypnosis differs from the effects produced by relaxation alone and also examine whether suggestions given outside of hypnosis (‘waking suggestions’) produce similar changes to those

given during hypnosis. Lastly, if hypnosis is an important factor, it can be argued that hypnotizability should be associated with observed changes in physiology.

15.2.1.1. Differentiating the effects of hypnosis from those of relaxation

The hypnotic induction produces a physiological state that cannot commonly be differentiated from relaxation. Both meditation (Walrath and Hamilton, 1975) and relaxation procedures (Mather and Degun, 1975) produce physiological profiles similar to hypnosis. An early example of the physiological similarity between hypnosis, meditation and relaxation is provided by Morse and colleagues (1977). Morse found no differences between the waking state, two types of meditation, hypnosis with or without suggestions, and relaxation in terms of various physiological measures (respiratory rate, pulse rate, blood pressure, skin conductance and muscle activity). Several researchers have also commented on the physiological similarity of hypnosis and the relaxation response (Edmonston, 1977; Benson *et al.*, 1981). Both involve similar levels of decreased heart rate, respiratory rate and blood pressure. In a review of hypnosis and progressive muscular relaxation, Humphreys (1984) concluded that the two states are physiologically similar. Thus, in investigating the effects of a hypnotic procedure, it is important to establish that the physiological changes attributed to hypnosis (e.g. cardiovascular, immune and skin reactions) are not simply an effect of relaxation.

As will be evident in this chapter’s literature review (Section 15.3), many hypnotic cyberphysiology studies do not control for the confound of relaxation. Suggestions for how to deal with this issue are provided toward the end of the chapter, but even when researchers can establish that specific suggestions themselves, not the relaxed state associated with hypnosis, are responsible for affecting the physiological change, they are faced with an additional issue: would the same suggestions, given outside of hypnosis, produce a similar effect?

15.2.1.2. Hypnotic versus nonhypnotic suggestions

At present, there are few compelling data to support the notion of hypnosis as an altered physiological state. Thus, whether or not suggestions

are considered hypnotic must be based on the *process* of hypnosis, hypnosis as a defined procedure. That is not to say that a person *must* be hypnotized if the process has been followed. As Nash makes clear (2005), hypnosis-as-product (state) ‘. . . is not achieved just because a hypnosis procedure has been administered’ (p. 268). However, suggestions can perhaps be considered hypnotic suggestions, as distinct from nonhypnotic suggestions, when they are part of the defined hypnotic procedure. Unfortunately, establishing an agreed on definition of hypnosis (even as a procedure) has been problematic. While Division 30 (Psychological Hypnosis) of the American Psychological Association recently offered a definition (Green *et al.*, 2005), this definition has been criticized (Nash, 2005). It is of some importance how researchers define a hypnotic induction. The APA Division 30 definition speaks of the induction as ‘. . . an extended initial suggestion for using one’s own imagination, and may contain further elaborations of the introduction’ (p. 262). It has been argued that ‘. . . the first test suggestion . . . [of a scale] . . . becomes a functional induction’ if the scale’s standardized induction is removed (Nash, 2005, p. 270).

For researchers wishing to study the effect of hypnotic suggestions on allergic skin reactions, could suggestions for reduced wheal size act as a functional induction if the standard (relaxation) induction is not used beforehand? If so, testing hypnotic suggestions against nonhypnotic suggestions would become difficult. And we are not helped by simply defining the situation to the subject as hypnotic. To argue that a process is or is not hypnotic based on whether the word ‘hypnosis’ is used seems somewhat unreasonable in light of the fact that the field of hypnosis was alive and well before Braid coined the term.¹ While use of the term hypnosis may influence subsequent responsiveness (e.g. Barber and Calverley, 1964, 1965), failure to use the term does not *de facto* define the procedure as nonhypnotic.

¹ The procedures for hypnotic induction have changed over the course of the history of hypnosis. Mesmer’s passes differ sharply from contemporary approaches. One study has even demonstrated that subjective and physiological measures change when mesmeric passes are added to a standard hypnotic induction (McGarry, 1987).

Comparison of hypnotic suggestions versus nonhypnotic suggestions has received some attention, particularly in the early reviews by Barber (e.g. Barber, 1965). A number of reports have examined this issue (e.g. Barber *et al.*, 1964; Winer *et al.*, 1965; Johnson and Barber, 1978; Clarke and Gibson, 1980) and there is no consistent evidence that procedures involving hypnotic inductions, or differentially defined as hypnotic, are more effective than ‘waking’ suggestions. As discussed above, whether or not this is a problem for hypnosis researchers depends on how hypnosis is defined.

Young (as cited by Paul, 1963) argued that if causation is to be attributed to hypnosis, hypnotic behavior must be compared against waking behavior. Young proposed that changes demonstrated under hypnosis were likely to be due to subject peculiarities (individual differences) rather than hypnotic suggestions. Hull (1933) also argued that many autonomic functions should not be considered under ‘involuntary control’, but rather ‘indirect voluntary control’, which can be influenced in a nonhypnotized subject by talking (such as a discussion of eating leading to gastric secretions). Even Milton Erickson (1980) made it clear that he was ‘exceedingly suspicious’ (p. 180) of certain mind-over-body demonstrations, recognizing that certain individuals are able to exert voluntary control over physiological functions outside of hypnosis. In discussing the excellent results of a subject who demonstrated vasomotor changes in hypnotic trance, he stated that such results appear to be ‘an excellent demonstration of the proof of the possibility that hypnotic measures are bringing about physiological changes’ (p. 180). However, the subject later told Erickson how he could do the same thing ‘without being in a trance’ and he ‘. . . very neatly and carefully demonstrated it’ (p. 180).

Thus, it is important to recognize that individual capability may be an important factor in successful elicitation of physiological change and that research examining group characteristics may fail to find effects due to large interindividual variability. One individual difference, which is potentially significant for establishing the importance of hypnosis in physiological control, is the measure of hypnotizability.

15.2.1.3. Effects of hypnotizability

Many hypnotic cyberphysiological investigations have worked exclusively with pre-screened highly hypnotizable subjects, presumably based on the assumption that it would increase the likelihood of finding significant effects for hypnotic interventions. For example, as we will see with Zachariae's series of studies on allergic skin reactions (Zachariae *et al.*, 1989; Zachariae and Bjerring, 1990, 1993), the effects of suggestions were only examined in highly hypnotizable subjects. The results of such studies do not allow us to determine whether hypnotizability really is a factor, for it is unclear whether low hypnotizables given the same hypnotic suggestions would have shown similar results.

A number of studies, however, have directly examined whether or not hypnotizability is an important variable; the notion being that if a physiological change is produced via hypnosis, effects would be more apparent in highly hypnotizable individuals. The two methods commonly employed to test this are either to compare the results of pre-selected high and low hypnotizables or to test the correlation between hypnotizability and the dependent physiological variable. The measures used to assess hypnotizability have varied, making a comprehensive analysis of the findings additionally challenging. At various times, researchers have examined the association between physiological changes and the Creative Imagination Scale (CIS; Barber and Wilson, 1978; Wilson and Barber, 1978), the Stanford Hypnotic Clinical Scale (SHCS; Morgan and Hilgard, 1978), the Penn State Scale of Hypnotizability (PSSH; Pepe, 1985), the Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A; Shor and Orne, 1963) and the Stanford Hypnotic Susceptibility Scale: Form C (SHSS:C; Weitzenhoffer and Hilgard, 1962). This is an important issue to keep in mind as one reads the ensuing literature review. A summary and discussion of this matter is presented toward the end of the chapter.

15.2.2. Relative efficacy of hypnosis versus other psychological techniques

If consistent cyberphysiological effects can be attributed to hypnosis, it is important then to determine whether hypnotic techniques are of

equal or greater efficacy than alternative psychological procedures. This is a significant issue for both basic and translational research. A thorough comparison between hypnosis and other techniques, such as relaxation therapy, biofeedback, meditation and subtle energy therapies, is a Herculean task well beyond the scope of this chapter. Outside the field of hypnosis, there is growing evidence that nonhypnotic psychological techniques can influence physiology, including cardiovascular and immune function measures (e.g. Paul, 1969; Smith and McDaniel, 1983; Peavey *et al.*, 1985; Smith *et al.*, 1985; Green and Green, 1987; Hubert *et al.*, 1993; Yung and Keltner, 1996; Amigo *et al.*, 1997; Pawlow and Jones, 2002). Thus, while a study directly comparing relaxation and hypnotic suggestions may find no effect for relaxation, this information must be considered alongside positive evidence from nonhypnosis studies on relaxation. Analysis of effect sizes from independent studies may provide some clue as to the relative efficacy, but the variability in populations sampled, physiological measures assessed and the settings, timing or duration of interventions make this sort of analysis problematic. As evidenced from the following review of the literature, there are few studies that directly pit hypnosis against other techniques for altering physiology. Such an approach is necessary if we are to evaluate the relative efficacy of hypnosis adequately.

15.3. Reviewing the literature: foundation studies and recent research

A rich literature documents the use of hypnosis to modulate aspects of the human body. In reviewing the extensive history of this research, it is interesting to note how some topics that were once enthusiastically studied have not been revisited by contemporary researchers, while other early areas of inquiry have stood the test of time and still command the attention of researchers today. With increasing technological sophistication for assessing physiological parameters, new topics have also been introduced to the literature, particularly in relation to increasingly simple methods for assessing the

immune system. There is no clear pattern to the waxing and waning of interest in the various topics. While some topics appear to have lost favor after failures to show replicable effects, other early studies, such as those dealing with hypnotic breast enlargement, showed consistent success, and yet no recent research in this area has been published.

In attempting to cover this complex and varied area, particularly the multitude of varying terminologies, we have divided the following review into three major sections: (1) foundational studies on topics that no longer receive much attention; (2) topics that have stood the test of time and are still being actively researched; and (3) emerging interests that captured the attention of contemporary researchers. Using this basic structure, we cover a variety of topics—from vision improvement to wound healing—thus the literature review also provides a useful reference for examining the literature on circumscribed topics. We hope this organization allows the reader to digest the important points from a large and multifaceted literature.

15.3.1. The foundational studies

As hypnosis became popularized as a powerful psychophysiological tool, many researchers set out to test its effects empirically. Many early studies of hypnosis and the body used developing psychophysiological monitoring equipment and provided the first attempts to separate the effects of hypnosis on self-reported experience from actual changes in the body. The areas covered in this section address those early attempts to associate hypnosis with physiological processes. While the studies are mostly dated, they do not represent ‘immature’ science. As will be seen, they present the same range of scientific rigor that is seen in contemporary research. These areas have in common the fact that they are no longer widely and actively researched.

15.3.1.1. Blood pressure and hypertension

Hypnosis has been actively used in the literature as a nonpharmaceutical method for treating essential hypertension. Comparisons with other relaxation and biofeedback techniques are especially important. A well-controlled study was

conducted by Friedman and Taub (1977) in which 48 hypertensive individuals (diastolic blood pressure (DBP) >85 mmHg) were placed into one of four conditions: hypnosis only; biofeedback only; hypnosis and biofeedback combined; and measurement only (control group). Suggestions for the hypnosis-only group were simply to relax as much as possible. Subjects in the biofeedback groups were shown their DBP readings and were told to get that number as low as possible. Subjects were only ‘randomized’ into hypnotic groups if they scored seven or above on the SHSS:A. Follow-ups were conducted at 1 week and 1 month. Only the biofeedback and hypnosis groups showed a significant reduction in DBP over baseline levels. Among these two groups, hypnosis was superior, with an average decrease in DBP of 7 mmHg at the 1-month follow-up. In another study (Deabler *et al.*, 1973), hypnosis was found to be superior to both control (sitting with no instructions) and relaxation in reducing systolic blood pressure (SBP) and DBP. No attempt was made to screen or control for hypnotizability. The treatments worked whether or not individuals were taking antihypertensive medication.

Hypnosis has also been used to manipulate blood pressure in normotensives (individuals within the normal or healthy range of blood pressure). Sletvold and colleagues (1986) examined blood pressure responses to hypnotic and nonhypnotic suggestions in 40 normotensive subjects. Subjects were randomly assigned to a hypnosis group, simple relaxation group or control group. Subjects in the hypnosis and relaxation group were given direct suggestions to raise their blood pressure. The control group was given no specific suggestions. The authors found no group differences in SBP or DBP, suggesting that hypnosis did not increase individual control over blood pressure. In a later study, the authors did show an ability of hypnotized subjects to increase and decrease blood pressure (Sletvold *et al.*, 1990); however, an equivalent nonhypnotized group was not provided.

In general, the literature suggests that hypnosis is one technique that can be used to lower blood pressure. The use of hypnosis may be most effective in lowering the blood pressure of individuals who are hypertensive. While limited

clinical research is still carried out, hypnosis is often included in a broad, multidisciplinary approach to blood pressure control, involving other techniques such as relaxation and psychotherapy (e.g. Borckardt, 2002). Therefore, while evidence does suggest that hypnosis can be a useful tool for modifying blood pressure, it is not clear if hypnosis is any more powerful than other psychological approaches.

15.3.1.2. Breast enlargement

The use of hypnosis for breast enlargement has a long tradition in the clinical field, with the first anecdotal reports emerging from Erickson's (1960) work. More controlled work was conducted by LeCron (1969), who used a combination of suggested visualization and suggested greater physiological activity to increase breast size in 20 women aged 20–35. Breast size increased a moderate amount in most subjects (roughly 1.5 inches), with five showing an increase of 2 inches and three showing no change in breast size (although the authors did not indicate which dimension of the breast they measured). Willard (1977) also demonstrated breast enlargement in 22 women following hypnosis and imagery, with those most able to visualize the changes showing the largest increases. Staib and Logan (1977) looked at retained breast growth at a 3-month follow-up. Three women experienced slightly less than 2 inches growth after 12 weeks of treatment, using suggestions of visualization and sensations of growth. At the 3-month follow-up, an average 19 percent of the gains had been lost.

The issue of whether or not hypnosis without suggestions could affect breast size was investigated in a small study by Williams (1974), in which three women were hypnotized once a week for 12 weeks. Three subjects were given suggestions to feel a sensation of breast growth, and visualize a larger breast size, while another three women were simply hypnotized with no further suggestions. At a 12-week test, individuals in the hypnosis-only condition experienced no change while the suggestion group exhibited an average of 1 and 5/8 inches of increase in breast size. Williams later explored the role of estrogen in hypnosis-induced breast growth (1979). While hypnosis with suggestions once again increased breast growth over a control

group, no changes in urinary estrogen levels were detected.

Though a 'file drawer' phenomenon cannot be ruled out as an explanation for the lack of null findings in this area, the results of these early published studies uniformly support the use of hypnosis for breast growth. The studies vary in scientific rigor and many do not use a control group to assess naturally occurring increases or fluctuations of breast size over time. The topic does not seem to have been revisited in recent years, although it is unknown whether that phenomenon is related more to the lack of scientific interest, or a changing political and social climate. If further research in this field was to be conducted, it would be important to assess cardiovascular and endocrine components (such as progesterone and estrogen).

15.3.1.3. Improving vision

Hypnosis has generated interest amongst some optometrists as a method for improving eyesight (Vaughn, 1964; Milkie, 1972). There have been various reports on the use of hypnosis for eye misalignment (Look *et al.*, 1965), involuntary eye movement (Aschan *et al.*, 1962), cataract symptoms (Schneck, 1967) and amblyopia, or 'lazy eye' (Smith, 1961, cited in Milkie, 1972). Research has also examined the application of hypnotic suggestions in improving visual acuity. Kelley (cited in Barber, 1965) found improvements in visual acuity for 12 of 14 subjects who were given indirect hypnotic suggestions, though similar results were demonstrated for those who were given the same suggestions without hypnosis. Early case studies and preliminary research demonstrating hypnotically improved visual acuity (e.g. Copeland, 1967; Davison and Singleton, 1967) were followed by a number of more carefully controlled studies including those by Graham and Leibowitz (1972) and Sheehan *et al.* (1982). Sheehan *et al.* matched two groups of subjects on suggestibility and acuity, provided one of the groups with direct suggestions for improved vision while the other group listened to classical music, then tested the subjects with a series of visual signal detection tasks. The increase in visual acuity for the hypnosis group, compared with baseline levels, was significantly greater than that of the music group. These results, supporting the hypothesis that visual

acuity can be improved with hypnosis, were challenged by Wagstaff (1983), who argued that the apparent improvement was an artifact. In examining the changes in task performance, Wagstaff noted that while there was a difference between groups, this difference arose because subjects who listened to classical music showed *decreased* visual acuity, while the hypnosis group showed no real improvement (but see reply to Wagstaff by Smith *et al.*, 1983).

If additional research supports the effects of hypnotic suggestion on visual acuity, investigators will need to rule out the influence of increased motivation and begin to identify what, if any, physiological changes occur to produce improvements in vision. Although some have suggested that hypnosis produces observable physiological changes in the eye (Strosberg and Vics, 1962), there are, as yet, few convincing data to support such an effect, nor is there any evidence that improvements, even if consistently demonstrated, would persist for any length of time.

15.3.1.4. Blister formation

The production of blisters through hypnotic suggestions is almost folkloric among the hypnosis community. A chronological review of early 'experiments' on hypnotic blister formation is provided by Pattie (1941), who summarized 16 reports on this topic dating back to 1886. It didn't take long for people to realize that the blisters might be self-induced once the patients were no longer under the investigator's watchful eye. Thereafter, the majority of researchers employed bandages, constant observation and even plaster casts to prevent any intentional or unintentional stimulation of the specified area. Pattie summarized his opinion on this topic as follows:

The writer, after all this evidence, still finds himself in an attitude of suspended judgment, an attitude due mostly to his inability to understand by what physiological processes suggestion—or the central nervous system—could produce *localized and circumscribed* erythemas or blisters (p. 71).

The formation of blisters has been reviewed by others (Gorton, 1957; Paul, 1963; Johnson and Barber, 1976; Barber, 1978; Johnson, 1989; Gauld, 1990), though there have been very few

additional *studies* conducted since Pattie's review. Paul (1963) suggested that one of the major limitations of a number of prior studies was the failure to consider the possibility of blister formation resulting from contact dermatitis. For example, where coins, particularly those containing nickel, had been pressed firmly against the skin as a marker for where the blister should form, the resultant skin reactions may have been more a result of allergic reaction than hypnotic suggestions. In the 1970s, Johnson and Barber (1976) conducted the first rigorous study that attempted to control for 'the possibility that subsequent blister formation may have been due to self-injurious behavior, a preexisting labile skin condition, extraneous mechanical stimulation at the test site, contact dermatitis . . .' (p. 177). After assessing hypnotizability, 40 student nurses were provided with a passage from a book (Weil, 1972) describing the powerful effects of hypnosis for blister formation. The effect of hypnotic suggestions (being burned by a frying pan) for blister formation was then examined within-subjects by comparing the skin of subjects' 'test hand' with that of their control hand. In order to keep the investigator blind until after data collection, each nurse was provided with a 'secret envelope' on which the test hand (left or right) was identified.

Although 27 of the 40 subjects reported subjectively feeling a blister developing during the 20 min of hypnotic suggestions, not one of the 40 subjects actually developed a blister, nor were any significant temperature differences shown between the control and test hand. Interestingly, one subject showed an irregular pattern of inflammation of the test site near the end of the session. The subject had been burned by hot grease on the same spot 6 years previously, suggesting that perhaps the 'reliving' of a prior event may be an important consideration in producing physiological changes in response to suggestion. However, subsequent research suggests that this is not the case. In a study in which 60 subjects who had been previously burned were hypnotically age regressed and given suggestions to relive the event and experience the sensation of blister formation (Spanos *et al.*, 1982*b*), not one of the subjects developed blisters or showed changes in skin color. Like Johnson's study, one subject showed an anomalous response, in that he

demonstrated greater skin temperature differences between the test and control site during the hypnotic session. In both studies, however, the subjects demonstrating these atypical responses attained only moderate hypnotizability scores, strengthening the notion that the changes were due more to individual idiosyncratic responses than specific hypnotic suggestions.

The effects of hypnotic suggestions on blister healing have also been investigated by applying noxious thermal stimulation (a heated rod) to the skin (Chapman *et al.*, 1959). Thirteen subjects were used in a series of 40 tests in which comparisons were made between arms after suggestions of increased tissue vulnerability in one arm and suggestions of anesthesia or normality in the other arm. No statistical analyses were performed, but descriptive data indicated greater tissue damage for sites of suggested vulnerability. For example, in 20 of 27 tests, the inflammatory reaction was greater on the site of suggested vulnerability compared with the site of suggested anesthesia. More recently, research examining the potential for hypnotic suggestions to increase or decrease skin inflammation induced by ultraviolet-B radiation has shown that, while suggestions are associated with differences in cutaneous blood flow, they do not appear to influence inflammation (Zachariae *et al.*, 1994).

In summary, the notion that hypnotic suggestions can produce blisters does not appear to be reliably validated by controlled research. After correcting for potential confounds, such as self-injurious behaviors or allergic reactions, there is seemingly little experimental evidence to support such claims. The potential for hypnotic suggestions to diminish skin inflammation generated by *real* external noxious stimuli (such as a heated rod or ultraviolet radiation) remains unclear, given the limited amount of research and conflicting findings.

15.3.1.5. Hypnosis and sexual dysfunction

There are numerous reports of hypnosis for the treatment of sexual dysfunction such as impotence and frigidity (e.g. Watkins, 1947; Dittborn, 1957; Schneck, 1970*a,b*; Segel, 1970; Beigel, 1971; Levit, 1971; Deabler, 1976; Ward, 1977; Hall, 1978; Crasilneck, 1979, 1982, 1990, 1992; Sexton and

Maddock, 1979; de Shazer, 1980; Bateman, 1981; Diment, 1984; Matez, 1984; Fuchs, 1985; Goguen, 1985; Stanton, 1990; Frederick, 1991; Aydin *et al.*, 1996, 1997), but such reports relied largely on case studies in which treatment for sexual dysfunction was integrated into a psychodynamic hypnotherapeutic context of uncovering unconscious conflicts, fears, guilt or anger. Only a handful of investigators have used direct suggestions for the alleviation of sexual dysfunction (Crasilneck, 1990; Aydin *et al.*, 1997), where the hypnotic suggestions were targeted toward treating the symptoms (e.g. ‘You will have good, hard, solid, erections with good ejaculatory response’, Crasilneck, 1990, p. 153) rather than resolving the hypothesized (psychogenic) cause. In summary, while numerous reports in this area are generally positive, there appear to be no well-controlled studies on the topic. Thus, at present there is no solid foundation on which to support the notion of hypnosis as a central factor in reducing sexual dysfunction.

15.3.1.6. Urinary system

Hypnosis has been used as a treatment for urinary retention (Werner, 1962; Chiasson, 1964; Patton and Sheehan, 1966; Allen, 1972; Goggins, 1983) and incontinence (Godec, 1980; Freeman and Baxby, 1982; Freeman, 1987). In the Freeman (1987) study, 63 incontinent women aged 17–74 years participated in a study which tested the effects of hypnotic suggestibility on disease and treatment response. These women were all diagnosed with idiopathic detrusor instability, indicating that no anatomical problem could be found (i.e. their condition was thought to be psychogenic). Women with an anatomically associated, unstable bladder were used as a control group. No differences in suggestibility were found between the idiopathic group and the control group, and it was not reported whether or not hypnotic susceptibility predicted response to the treatment. The author reported that 58 percent of the group were rendered symptom free at the end of 12 hypnosis sessions, which spanned 1 year. The majority of individuals, however, relapsed by the 2-year follow-up. The author suggested that significant life events often precipitated relapse.

Hypnosis has also been used as a treatment for nocturnal enuresis in children. As reported

in a review by Mellon and McGrath (2000), a total of four studies (Olness, 1975; Stanton, 1979; Edwards and van der Spuy, 1985; Banerjee *et al.*, 1993) reported on average a cure rate of 71.2 percent. In the Banerjee *et al.* (1993) study, hypnosis was compared with imipramine treatment. While both groups had an equally successful cure rate immediately following treatment, the hypnosis group fared significantly better at a 6-month follow-up. The authors noted, however, that only one study was controlled and had a measurable outcome variable. Thus, the use of hypnosis to effect changes in the urinary system has been limited to treatment of existing urinary conditions. Studies have frequently suffered from methodological problems that limit the internal validity of the study findings. Given this, hypnosis remains a promising approach to treating urinary system disorders, but considerably more scientific validation is required before it can be considered an efficacious treatment.

15.3.1.7. Gastric motility

A handful of early psychophysiology studies tested the relationship between hypnosis and gastrointestinal functioning. In one such study, Hall *et al.* (1967) examined the effects of hypnosis on gastric motility. After a night of fasting, subjects were intubated and infused with a 'meal' of 100 g/l of dextrose and 50 mg/l of phenol red in distilled water. Following the infusion, subjects were given the experimental manipulation, which differed on each of 5 days. Days 1 and 5 were controls, with no instructions given before or during data collection. Day 2 consisted of a hypnotic induction only. Days 3 and 4 included both a hypnotic induction and suggestions for either indigestion (day 3) or constipation (day 4). Following 30 min of the experimental protocol, gastric functioning was determined by aspirating stomach contents and measuring the volume of phenol red remaining in the stomach fluids. It was expected that hypnotically suggested experiences of indigestion and constipation would decrease gastric emptying, thereby increasing residual amounts of phenol red. While six of the eight subjects did report increased gastric discomfort after the indigestion and constipation suggestions, objective markers of gastric functioning were not similarly affected. None of the hypnosis trials yielded physiological results (residual volume, volume passing

pylorus, acid, pepsin or chloride levels) different from those of the two control trials.

Eichhorn and Tracktir (1955) found a significant effect for hypnotically suggested emotional experiences on gastrointestinal parameters. In their study, 24 students were given, in a counter-balanced fashion, suggestions for anger, fear and contentment. Following a rapid induction, subjects were told they would experience each emotion mentioned to them and would feel that way strongly until told otherwise. Free acid, total acid, volume of secretion and pepsin were measured during each experimental condition. As predicted, the authors found that all measures of gastric functioning were significantly higher (save for pepsin, which was significantly lower) in the contentment condition as compared with the anger and fear conditions. Without a hypnosis-only group or true control group, however, it is not possible to determine what effect hypnosis had over the simple, nonhypnotic concentration on an emotional state. The data do suggest, however, that suggestions to experience emotional states under hypnosis are potent enough to elicit measurable gastrointestinal effects. It is possible then, that hypnosis may serve to augment emotions, potentiating the physiological aspects of those states.

It is possible that suggestion in general, rather than hypnosis *per se*, is responsible for suggestion effects on gastric functioning. In a small study ($n = 7$) conducted by Kehoe and Ironside (1964), subjects reported a high number of gastric complaints when told (under hypnosis) to experience whatever feelings they associated with the word 'depression.' No suggestions pertaining to the gastrointestinal system were given. Secretory rate was assessed by continuous, manual gastric aspiration. Experiences such as nausea and vertigo were associated with significantly lower secretory rate of total acid, while experiences such as hunger were associated with higher secretory rate. As the authors observed a similar and equally significant relationship when subjects were not hypnotized, it seems unlikely that hypnosis was a critical factor in the observed results.

This field, like many others, suffers from the lack of proper controls. The research suggests that it is not effective to suggest directly a change in gastric functioning. A more powerful

approach seems to be suggesting a specific emotional state, such as depression or anger. Evoking such a state may cause physiological changes; however, these changes may also occur through nonhypnotic suggestion. The field of hypnosis and gastric motility has been largely forgotten in the recent literature. An important exception is irritable bowel syndrome (IBS), which will be discussed in Section 15.3.3.

15.3.2. Topics of enduring interest

While some areas within the field of hypnosis and mind–body interactions have not persisted, others have continued to attract the attention of researchers. We now examine these enduring topics, topics that have been supported by ongoing research because the questions are important, the evidence has supported continued study, or because new technologies have allowed researchers to investigate the topic in novel or cost-effective ways.

15.3.2.1. Asthma and the respiratory system

Hypnosis has been used to treat breathing problems such as vocal cord dysfunction (Anbar and Hehir, 2000), chronic dyspnea (Acosta-Austan, 1991) and asthma (Maher-Loughnan *et al.*, 1962; Maher-Loughnan, 1970; Moorefield, 1971; Hanley, 1974; Aronoff *et al.*, 1975; Ben-Zvi *et al.*, 1982; Neinstein and Dash, 1982; Kohen, 1996). In an early randomly controlled trial (Anonymous, 1968), 252 asthmatic children and adults were randomized into a hypnosis group or a relaxation group. The hypnosis treatment group showed a statistically significant improvement in forced expiratory volume (FEV), a lung capacity test that is predictive of future asthma attacks. However, the subjects increased FEV by an average of only 4.3 percent, which is considered to be of little clinical value (Huntley *et al.*, 2002).

In an attempt to determine which asthmatic patients were most likely to respond favorably to hypnotic interventions, Collison (1975) examined 100 asthmatic individuals aged 8–69 years. Several factors were found to predict reductions in asthmatic attacks in response to the treatment, including: the ability to go into a deep trance, the youthfulness of the subject and the presence of psychological etiological factors.

Similarly, Ewer and Stewart (1986) found that responsiveness to hypnosis treatment was limited to high hypnotizables. Those responding positively to treatment evidenced lower asthma severity, fewer self-reported symptoms, greater peak expiratory flow and reduced use of bronchodilators. Low hypnotizables did not respond to the treatment.

In addition to reducing the severity of asthmatic symptoms through hypnotic techniques, researchers have also demonstrated that asthma symptoms can be induced by hypnotic suggestions. In one such study (Thorne and Fisher, 1978), hypnotic susceptibility was a significant predictor of objective measures of asthmatic symptoms (FEV and vital capacity) following hypnotic suggestions for asthma. Additional research comparing hypnotic suggestions with waking suggestions (Clarke and Gibson, 1980) found that patients demonstrated significantly more signs of asthma attacks (measured by minute expiratory volume) under hypnosis when suggestions of relaxation, anger, fear, excitement and asthma symptoms were given. However, later research has demonstrated that such an effect can also be produced in normal individuals given waking suggestions (Kotses *et al.*, 1987).

There is some evidence that the effects of hypnotic suggestions are limited to those aspects of breathing over which individuals have voluntary control. Changes in respiration following suggested relaxation and suggested muscular effort were measured in both hypnotized and nonhypnotized subjects (Agosti and Camerota, 1965). Compared with baseline measures, relaxation suggestions decreased pulmonary ventilation in both groups, but only substantively so in the hypnosis group (though, as the authors note, this group started with higher baseline levels). Suggested muscular work increased ventilation, again especially so in the hypnosis group. However, in spite of the changes in ventilation, there was no change in uptake of oxygen, due to decreases in respiratory efficiency.

A small number of additional studies have examined the effect of hypnotic suggestions on behavior related to the respiratory system. For example, Jana (1971) reported a case study in which respiratory rate decreases occurred after suggestions of smoking a cigarette (though

similar suggestions without hypnosis were not tested), and other researchers have examined the influence of hypnosis for controlling coughs through case reports and descriptive analyses (Elkins and Carter, 1986; Anbar and Hall, 2004). However, there appear to be no well-controlled studies related to hypnotic treatment of cough, and other suggestive techniques outside of hypnosis have shown similar improvements (e.g. Cohan and Stone, 1984).

Overall, hypnosis appears to be a useful adjunct in the treatment of asthma. The technique is particularly effective when patients are highly hypnotizable, more sessions are used, sessions are reinforced with self-hypnosis and patients are younger (Hackman *et al.*, 2000). While more recent randomized controlled trials are needed (Gyorik and Brutsche, 2004), the number of successful trials indicates the possible role of hypnosis in modulating the symptoms of asthma.

15.3.2.2. Allergic skin reactions

There have been a handful of studies on the treatment of general allergies by hypnotic suggestion (e.g. Aston, 1959; Kroger, 1964; Perloff and Spiegelman, 1973; Langewitz *et al.*, 2005),² but by far the greatest focus regarding allergic reactions has centered on DTH. Discovered over 100 years ago, DTH is an immune reaction to an antigen, generally studied through either intradermal injection or skin contact with an antigen. In order to display the characteristic erythema and induration (reddening and hardening of the skin in the exposed area), an individual's immune system must have been previously sensitized to the antigen, thus the DTH skin test is used to assess whether prior exposure to an antigen has occurred. Though the precise mechanism of the reaction is still

unclear, the process is believed to be mediated by T-cells (Black, 1999). An early case report of an asthmatic girl described the use of hypnosis to control the DTH response (Clarkson, 1937). Without hypnosis, the patient developed a large wheal to an intradermal test for egg sensitization. The next day, a suggestion that no reaction would occur was given during hypnosis and no wheal formed. Following hypnosis, the patient was again tested and the wheal was produced as before.

There is some evidence that the nature of the specific suggestions for reducing DTH may be important. In a study of five hospitalized asthmatic patients described as 'excellent hypnotic subjects', a number of different allergens were tested intradermally ('within the skin') during both nonhypnotic and hypnotic conditions (Dennis and Philippus, 1965). Only one condition, in which specific hypnotic suggestions were given for nonreactivity and that the injected skin area would feel cold, resulted in reduced DTH reaction compared with a nonhypnotic no-suggestion control condition. Conditions in which specific suggestions for nonreactivity and *anesthesia* were given during hypnosis, hypnotic suggestions for nonreactivity to a specific allergen or suggestions for nonreactivity during the waking state failed to demonstrate any effect. The authors also found no effect for hypnotic suggestions to *produce* a reaction following the injection of a placebo substance.

Specific versus general suggestions were also assessed by Mason and Black (1958) in their study of an allergic patient who showed skin reactions to three environmental allergens applied to the arm. Following hypnotic suggestions for the relief of hayfever (with no specific mention of skin reactions), the size³ of the DTH reaction progressively decreased over a period of 7 weeks. When the skin of the patient's leg was tested, however, a large wheal appeared.

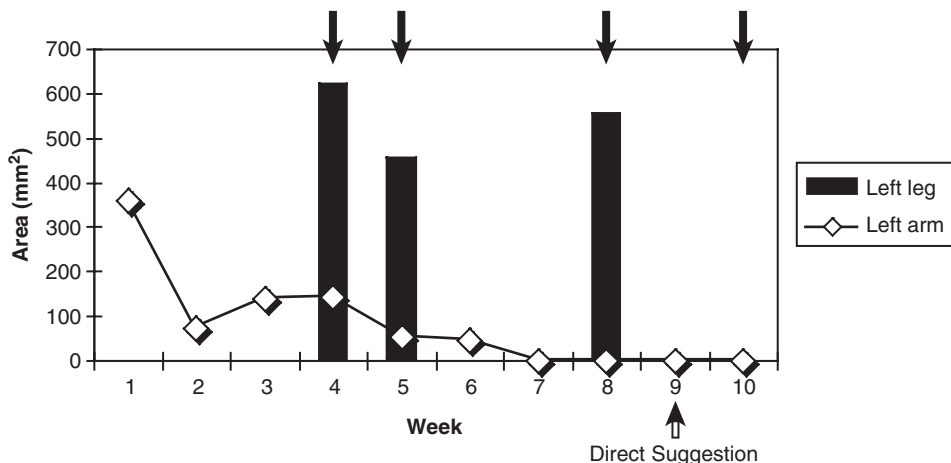
² Aston reports a psychotherapeutic case study involving a female patient with food allergies, with successful treatment after a single session in which the hypnotist uncovered a deep-rooted embarrassment about being tall. The success was based on a follow-up session 2 years later in which the patient reported no allergic symptoms since the previous session. Interestingly, both therapist and patient were dentists, and the therapist in this study was the patient's instructor in a hypnosis training session. Such a situation amplifies the potential confound of demand characteristics.

³ In a time before computer scanning technology, Mason and Black ingeniously assessed wheal size by tracing the area of the wheal and then transferring the traced area to a lead sheet (taken from the back of old dental X-ray films). The traced areas were cut out and the size of the area was calculated by weighing the lead (the sheet had been previously checked for consistency in thickness).

The researchers then delivered direct hypnotic suggestions that the patient's skin would be unresponsive to tests anywhere on her body and, tested immediately on waking, there was no subsequent allergic reaction to allergen testing on the leg. After 10 weeks of treatment, the patient was consistently showing no skin reactions (see Figure 15.1 for a graphical summary of results). To examine one potential mechanism for this change, a control subject with no skin reactions to allergens was subsequently tested for wheal reaction after having been intradermally injected with serum (blood plasma) from the allergic patient. After this sensitization, the control subject developed a wheal when allergens were applied to the skin. To Mason and Black, this test demonstrated that the blood of the cured patient still contained the 'serological basis of her previous hypersensitivity' (Mason and Black, 1958, p.879).

Zachariae (1989) has shown that the type of hypersensitivity is a possible factor in hypnotic modulation of skin reactions. By comparing two types of allergic skin reactions, a rapid histamine skin prick reaction (Type I) versus the delayed Mantoux (Type IV) reaction, Zachariae showed that hypnotic suggestions to decrease

skin reactions resulted in a reduction in erythema (reddening) for both Type I and Type IV, but that reductions in induration (hardening) were only achieved for the Type IV reaction. Previous studies had shown positive effects of hypnotic suggestions on Type IV reactions (Black, 1963; Black *et al.*, 1963; Black and Friedman, 1965), but Zachariae set out to compare the two reactions directly. The study used both within-subject and between-subject controls, and assessment of reactions was performed blindly. It is important to note that the Type I reaction was assessed after just 7 min of hypnotic suggestions, whereas the Type IV reaction was assessed after 72 h, following both an extended session of imagery suggestions immediately after the injection and repeated sessions of self-hypnosis using pre-recorded audiotapes. Within the same study, Zachariae tested the potential for hypnotic suggestions to increase both Type I and Type IV reactions—but found no increase in either erythema (redness) or induration (raised hardened area). Zachariae later demonstrated that a similar reduction in erythema to histamine prick tests could be achieved using hypnotic suggestions for *analgesia* of the tested arm (Zachariae and Bjerring,



Note. Down arrows indicate timing of DTH reaction measurements of left leg.

Fig. 15.1 Graphical summary of results from Mason and Black's (1958) study of DTH reactions. From 'Allergic skin responses abolished under treatment of asthma and hayfever by hypnosis', by A. A. Mason and S. Black (1958), *Lancet*, 1: 877-879. Reprinted by permission from A. A. Mason.

1990) and that hypnotically induced emotions could also influence skin reactions to histamine, with flare reactions being greater during induced sadness than during induced happiness (Zachariae *et al.*, 2001). Other hypnosis research supports the mediating role of emotion in histamine skin reactions (Laidlaw *et al.*, 1996), suggesting that while hypnotic suggestions may reduce histamine skin reactions, variability in efficacy may be partially explained by an individual's feelings of tension and irritability.

In an attempt to uncover the mechanisms by which hypnotic suggestions might alter DTH reactions, Zachariae also examined whether hypnotic suggestions can alter *sensitization* to allergens. In this study, rather than provide hypnotic suggestions for decreased skin reactions at the time of the skin tests, Zachariae administered two different experimental allergens to the skin of highly hypnotizable subjects to sensitize them for later allergic skin tests. After application of the sensitizing allergens, the subjects were hypnotized and given suggestions to increase their immunological reaction in one arm and decrease it in the other, using suggested perceptions of warmth/itchiness and coolness/numbness, respectively. Self-hypnosis was performed once a day for the subsequent 5 days using an audiotaped session to reinforce the suggestions, and subjects returned 6 weeks later for skin reaction tests to the sensitized allergens. The results again demonstrated an effect for erythema but no effect for induration, even though suggestions in this study had been given during the sensitization stage rather than the subsequent skin reaction test.

Although the above reports provide encouraging evidence of the impact of hypnotic suggestions on allergic reactions, other case reports and controlled studies have shown no effects. Zeller (1944) published a series of studies examining the hypnotic modulation of allergic skin reactions in both allergic and non-allergic patients. Subjects in Zeller's study were sensitized with serum obtained from a patient with ragweed allergies. Testing both intradermal injection and scratch methods for introducing the antigen, wheals were produced in both control sessions (no hypnosis) and following hypnotic suggestions that no skin response would occur. Additionally, Zeller failed to induce wheals hypnotically in nonsensitized

skin areas using hypnotic suggestions for skin reactivity. Similar failures to reduce or increase wheal formation size after specific hypnotic suggestions were reported by Levine *et al.* (1966) in a study that tested nonallergic individuals, those with ragweed allergies and those with chronic urticaria, and negative findings were also demonstrated by Beahrs (1970) using mumps antigen, trypsin and histamine. A randomized control study by Locke (1987) failed to show that hypnosis could enhance or suppress the DTH response. Locke (1994) later tackled a number of potential limitations of his 1987 study by carefully pre-screening subjects for both positive DTH reactions and their cyberphysiological potential (demonstrated by an ability to change fingertip temperature following hypnotic suggestions). To rule out an effect of hypnotist experience, Locke also enlisted Zachariae to act as the hypnotist in the study. Even with these issues addressed, Locke again found no effect of hypnosis on DTH response.

An often cited reference regarding the potential for hypnosis to affect physiology is that of Ikemi and Nakagawa (cited in Barber, 1978). In their study, the researchers demonstrated that allergic reactions to the leaves of plants (similar to poison ivy) could be influenced by hypnotic suggestions. Five high-school students who were sensitive to the plants were told under hypnosis that they were being touched by the leaves from the poisonous trees. In actuality, they were being touched by leaves from a harmless tree. All five showed allergic skin reactions to the harmless leaf. The same subjects were later told under hypnosis that they were being touched by a harmless leaf, when in fact they were stimulated with the poisonous leaf. Four of the five subjects did not show the normal allergic reaction. Such findings demonstrate an impressive directionality of specific hypnotic suggestions and assist in excluding explanations based purely on relaxation. But there is more to the story. Ikemi and Nakagawa also provided the same suggestions to eight different students, without first providing a hypnotic induction. All of these students showed allergic reactions to the nonpoisonous leaf, and seven of the eight did not show the expected allergic reaction when a poisonous leaf was applied. The specific role of hypnosis in eliciting these changes

therefore rests on how researchers *define* hypnosis, as discussed previously in Section 15.2.

Thus, the potential for hypnosis to alter allergic responses is not yet clear. Although there are a number of studies supporting its efficacy, there are also well-controlled studies that fail to demonstrate an effect. Given that the mechanism underlying many allergic responses is still far from being fully understood, it is possible that these discrepancies are due to subtle differences in the timing and nature of the suggestions given and/or the specific allergens and reactions tested. While researchers still have their work cut out for them, there appears to be promise in this field of inquiry, as summarized in a 1992 committee report on allergy published by the Royal College of Physicians, London, who concluded that hypnosis deserved further evaluation (Kay and Lessof, 1992).

15.3.2.3. Peripheral skin temperature and blood flow

Peripheral skin temperature is reflective of blood supply and, indirectly, vasodilation and vasoconstriction (expansion and narrowing of blood vessels). When vasoconstriction occurs (as with a stress response), blood supply decreases, lowering skin temperature. Skin temperature, then, is commonly used as a marker of stress and relaxation, the latter being associated with higher skin temperatures. Peripheral temperature provides a noninvasive and accurate measure of vasoconstriction and blood flow (Brock *et al.*, 1975; Vincent *et al.*, 1988).

Attempts to use skin temperature as a biomarker of the hypnotic state have produced inconsistent results (Reid and Curtsinger, 1968; Grabowska, 1971; Peters and Stern, 1974; Piedmont, 1981; Bregman and McAllister, 1985). However, perhaps a more interesting question is whether or not hypnotic suggestions can be used to change skin temperature. Some studies have found that suggested pain (Hajek *et al.*, 1992) and heat (Raynaud *et al.*, 1984) can change peripheral temperature, while others have found that hypnosis does not confer any unique advantage for temperature control (Peters *et al.*, 1973). In one study comparing the utility of hypnosis with other techniques for controlling temperature, 73 individuals were randomly assigned to one of four groups: (1) biofeedback; (2) false biofeedback;

(3) relaxation; and (4) hypnotically suggested hand warming with biofeedback (Barabasz and McGeorge, 1978). While all the groups showed temperature increases, only the hypnosis group produced increases significantly greater than the other three groups (note, however, that there was no waking suggestion group). Other controlled studies have shown hypnosis to be effective for changing skin temperature, but not more so than biofeedback. For example, Dikel and Olness (1980) measured children's ability to control peripheral temperature voluntarily with self-hypnosis, hypnosis plus biofeedback and biofeedback alone. All groups significantly increased and decreased skin temperature in the suggested direction, but hypnosis did not increase the efficacy of biofeedback. Suggestions for temperature change, therefore, may not require hypnosis. The authors noted, however, that children may spontaneously use imagery even when not hypnotized. Children in the biofeedback group reported using vivid self-generated imagery during the session, and the authors raised the possibility that this imagery may be more potent than generic suggested imagery.

The relevance of hypnosis to altering peripheral temperature is supported by research demonstrating a relationship between hypnotic susceptibility and biofeedback-assisted temperature change during hypnosis (Piedmont, 1983). Toward the end of a standard SHSS:C session, 30 subjects were instructed to open their eyes but remain hypnotized. Subjects then completed a 10-min biofeedback session while under hypnosis, with red and blue lights indicating increases or decreases in finger temperature. Subjects were instructed to lower their finger temperature but were given no further suggestions. A significant negative correlation was found between hypnotizability and skin temperature. Simply put, high hypnotizables were better able to lower their peripheral temperature. Hypnotizability has also been found to predict the ability of hypnosis to reduce stress-induced vasoconstriction (Jambrik *et al.*, 2005).

Self-reports of temperature change are a common occurrence during hypnosis. However, evidence suggests that this report reflects perceptual changes more than observable temperature change. Wallace and Kokoszka (1992) noted that many individuals report sensations of coldness when given suggestions of analgesia under hypnosis.

The authors conducted three studies in order to determine whether or not experienced coldness was associated with actual decreases in skin temperature. In these studies, individuals ($n = 104$) with low and high hypnotizability were hypnotized and given suggestions for arm analgesia. Suggestions consisted of visualizing large doses of Novocain injected in the area and increased sensations of numbness (no suggestions specifically for cold). Highly hypnotizable individuals reported significantly greater analgesia in the suggested area as well as more sensations of coldness, but none of the experiments yielded a measurable temperature effect for suggestion or group (high/ low hypnotizable). Likewise, there were no skin temperature differences between those receiving analgesia suggestions and those given suggestions to relax. Thus, the perception of coldness accompanying hypnotically suggested analgesia appears to be the result of psychological, not physiological, changes. Other studies have also found behavioral responses to match temperature suggestions more closely than actual changes in peripheral temperature (Clark and Forgione, 1974).

More recent studies have included invasive measures of hemodynamics (performance of the circulatory system). In one well-designed experiment, Casiglia and colleagues (1997) tested hemodynamics in healthy individuals following both real and hypnotically simulated phlebotomy (blood draw). One control group underwent a real 300 ml phlebotomy session while SBP, DBP, blood flow and vascular resistance were measured. Another group of sex- and age-matched individuals (selected for their high hypnotizability) completed each of three experimental sessions: (1) hypnosis-simulated phlebotomy; (2) hypnosis induction with no further suggestions; and (3) simple rest with no further instructions. In all cases, subjects lay in a hospital bed throughout the entire procedure, while cardiovascular measurements were collected. For the hypnosis-simulated phlebotomy group, imagery suggestions were used (e.g. 'now the needle is being inserted into your arm ...'). At baseline, there were no significant group differences in any cardiovascular parameter. During the protocol, both the real phlebotomy and hypnotically suggested phlebotomy groups showed the same hemodynamic response, with

no significant between-group cardiovascular differences. The hypnosis with no suggestion and simple bed resting groups showed no changes in cardiovascular parameters, leading the authors to conclude that hypnotically suggested blood draws evoke the same hemodynamic response as actual blood draws, but that hypnosis alone does not evoke such a response. Note that no waking suggestion group was included in the study, thus it is not clear whether or not the same hemodynamic response would have occurred with nonhypnotic suggestions.

Weinstein and Au (1991) tested differences in hemodynamic response to hypnosis in 16 hypnotized individuals and 16 controls during angioplasty (artery widening). While hypnotized individuals were able to withstand angioplasty significantly longer than controls, no objective markers (ischemia, blood pressure, pulse or heart rhythm) distinguished the two groups. These results mirror those in the peripheral skin temperature literature: hypnosis may change perceptual factors related to cardiovascular experience but does not change physiological aspects of that system.

Despite a lack of clear evidence for hypnosis as gaining any control over blood flow, hypnosis has been tested as a treatment for many cardiovascular conditions, including Raynaud's disease (Conn and Mott, 1984) and erythromelalgia, a painful condition associated with increased temperature in the extremities (Chakravarty *et al.*, 1992). Hypnotically suggested hypothermia has been used to control cancer metastases (August, 1975). While some promising results have emerged from these reports, these approaches have not been studied with the scientific rigor required for claiming efficacy.

The most recent use of hypnosis to alter blood flow has been in heart rate variability (HRV). In a basic sense, HRV is an indicator of sympathetic and parasympathetic balance. Too little variation may be indicative of excessive stress. There have been conflicting results regarding whether changes in heart rate variability are associated with the hypnotic state (De Benedittis *et al.*, 1994; Ray *et al.*, 2000). Interestingly, the most recent study of hypnotizability and HRV found that individuals of low hypnotizability may, paradoxically, be more susceptible to heart rate suggestions than highly hypnotizable individuals

(Sebastiani *et al.*, 2005). Low and high hypnotizables were given instructions to relax outside of hypnosis (in a normal state of wakefulness). There were no differences in HRV between groups before suggestions. After suggestions, both groups were able to decrease their heart rate, but only lows did so significantly. Furthermore, only lows increased parasympathetic aspects of HRV.

Despite being studied for many years, there is no clear evidence that hypnosis can directly modulate blood flow or peripheral skin temperature. As noted throughout this section, hypnotic suggestions seem more effective in changing the experience of the subject than the peripheral physiology of those individuals.

15.3.2.4. Hypnosis and pain

Perhaps one of the clearest examples of how identifiable physical mechanisms are influenced by psychological factors is the topic of pain. However, because of its general reliance on subjective reports rather than direct physiological changes, and because the topic is covered in more detail later in this book (Jensen and Patterson, Chapter 20, this volume), we have chosen to provide only a short summary of the issue within our own chapter.

Hypnotically induced analgesia is arguably the arena in which hypnosis has proved itself most adequately, providing reduction of both chronic (e.g. cancer) and acute (e.g. surgical) pain (Holroyd, 1996). Hypnotic analgesia has a long history, with prominent figures such as the Scottish surgeon James Esdaile (1808–1859) demonstrating its apparent effectiveness for surgery (including 200 patients with massive scrotal tumors) during his time in India. The fervor surrounding this particular use of hypnosis declined shortly after the completion of Esdaile's work, however, with discovery of the anesthetic qualities of ether and chloroform in the mid-1840s. Beginning around 1930, interest in the reduction of pain by hypnosis resumed and, today, from burn wound debridement (Patterson *et al.*, 1989; Patterson, 1992) to childbirth (Harmon *et al.*, 1990) to bone marrow aspirations (Lioffi and Hatira, 1999) and cancer in children (Lioffi and Hatira, 2003), hypnosis has found recognition as a dramatic method of producing analgesia, which in some cases has matched or exceeded that

derived from morphine. Additionally, research with naloxone, a drug that acts as a competitive antagonist at the opioid receptor, shows that hypnotic analgesia is not mediated by endogenous pain mechanisms involving endorphins (Spiegel and Albert, 1983).

A National Institute of Health report (NIH Technology Assessment Panel, 1996) found 'strong evidence for the use of hypnosis in alleviating the pain associated with cancer' (p. 313) and other data 'suggesting the effectiveness of hypnosis in other chronic pain conditions, which include irritable bowel syndrome, oral mucositis, temporomandibular disorders, and tension headaches' (p. 315). A meta-analysis of studies of hypnotically suggested pain reduction, based on pain reports from 933 subjects, showed that such suggestions provided substantial pain relief for 75 percent of the population across different types of experienced pain (Montgomery *et al.*, 2000). In one of the included studies, self-hypnotic techniques were used during interventional radiological procedures, in which intravenous pain medication was self-administered by patients by means of a push-button automated delivery system (Lang *et al.*, 1996). Compared with hypnosis patients, the control patients as a whole used seven times more drug units and reported significantly more maximal pain. Not only was the pain reduction evidenced by subjective reports and behavioral response, but the reduction of drug use in the hypnosis group was associated with a significantly lower incidence of oxygen desaturation and significantly fewer procedural interruptions due to cardiopulmonary instability.

Other research has shown that pain typically increases over the course of percutaneous medical procedures, but remains stable for patients using self-hypnosis techniques (Lang *et al.*, 2000). However, the efficacy of self-hypnosis techniques is not assured. A recent investigation found hypnotic intervention to be effective in the reduction of pain, anxiety and distress behavior in children undergoing lumbar puncture procedures, but only when heterohypnosis (therapist-administered hypnosis) was used, not when children used self-hypnosis (Lioffi and Hatira, 2003). It is clear that future research will need to address such disparities. For those interested in examining this topic further, a recent

summary of review articles that deal in some fashion with hypnosis and pain (Hawkins, 2001) provides an impressive preliminary resource.

15.3.2.5. Treatment of dermatological disorders

There have been a number of reviews supporting the potential for hypnosis to treat dermatological disorders (e.g. Shenefelt, 2000). Case studies have reported effective treatment of boils (Jabush, 1969), pruritis (Ament and Milgrom, 1967; Sampson, 1990; Rucklidge and Saunders, 2002), eczema (Twerski and Naar, 1974; Mirvish, 1978; Sokel *et al.*, 1993; Stewart and Thomas, 1995) and psoriasis (Kline, 1954; Frankel and Misch, 1973). Tausk and Whitmore (1999) performed a randomized controlled trial with psoriasis patients to examine the relative efficacy of hypnosis with or without specific suggestions for skin healing. No significant differences were shown in improvement, suggesting that specific suggestions were no more effective in treating psoriasis than the neutral hypnotic procedures. The researchers did, however, find an effect for hypnotizability; high hypnotizables showed greater improvement than medium hypnotizables (but see also Zachariae *et al.*, 1996, who failed to show a significant correlation between psoriasis improvement and hypnotizability in their study of the effects of relaxation and imagery suggestions).

The role of hypnosis in dermatology has most frequently been demonstrated in the alleviation of warts (Sulzberger and Wolf, 1934; Vollmer, 1946; McDowell, 1949; Obermayer and Greenson, 1949; Sinclair-Gieben and Chalmers, 1959; Ullman and Dudek, 1960; Tenzel and Taylor, 1969; Surman *et al.*, 1972, 1973, 1983; Ewin, 1974, 1992; Clawson and Swade, 1975; French, 1977; Tasini and Hackett, 1977; Dreaper, 1978; Johnson and Barber, 1978; Chandrasena, 1982; Straatmeyer and Rhodes, 1983; Morris, 1985; Noll, 1988, 1994; Spanos *et al.*, 1988, 1990; O'Loughlan, 1995; Felt *et al.*, 1998; Kohen *et al.*, 1998; Goldstein, 2005). An excellent review of the psychological treatment of warts, with particular emphasis on hypnotic procedures, is provided by DuBreuil and Spanos (1993). In one study (Spanos *et al.*, 1988), those who received hypnotic suggestions for wart removal demonstrated a 50 percent cure rate (as assessed by the number of warts lost and the

percentage of wart loss at a 6-week follow-up). This was significantly higher than the rate achieved by subjects who had been assigned to a waiting list control or who had received a cold laser placebo treatment. With reference to experimental research, DuBreuil and Spanos suggested that hypnosis-facilitated wart removal is not based on spontaneous remission and may be more effective than placebo techniques. However, they also concluded that suggestive treatments without a hypnotic induction appear to be equally effective.

Johnson and Barber (1978) found remission of warts for three of 11 subjects in a hypnosis group, but for none of the subjects in a 'focused contemplation', nonhypnotic group. These findings led the authors to suggest that the 'believed-in efficacy' of hypnosis may explain the observed differences. In other words, the hypnosis group may simply have had higher expectations about the effectiveness of their treatment. In attempting to define the role of expectancy in wart remission, research has shown that while subjects with low expectations of treatment efficacy do not lose warts, those with high expectations are not guaranteed positive results (Spanos *et al.*, 1988). Thus high expectancies appear to be a necessary, but insufficient, factor in the cure of warts (for discussion of a similar relationship between expectancies and hypnotizability, see Barnier and McConkey, 2004). Additionally, while some early studies suggested a relationship between hypnotizability and wart remission, later investigations using standardized measures of hypnotic ability failed to show significant correlations.

One of the most astonishing findings of the use of hypnosis in treating dermatological conditions was a report by the physician A. A. Mason of his treatment of a patient with congenital ichthyosiform erythrodermia of Brocq ('fish skin disease', Mason, 1952). The report, which appeared in the *British Medical Journal* in 1955, detailed the dramatic removal of the patient's thick, scaly, inflexible, skin as it softened and fell off following hypnotic suggestions. In what would now be considered a multiple baseline design (Borckardt and Nash, 2002), Mason gave the 16-year-old patient suggestions that the left arm would clear. The suggestion was limited to the left arm 'so as to exclude the possibility of spontaneous resolution' (p. 422).

Five days later, the thick horny layer ‘fell off’ to reveal pink and soft skin, and within 10 days the arm was ‘completely clear from shoulder to wrist’ (p. 422). Suggestions were then given for the right arm, and 10 days later for the legs and trunk. By the end of treatment, 95 percent of the arms were clear, with other areas of the body demonstrating significant improvement (see Figure 15.2). At a 4-year follow-up visit, the improvement had progressed (Mason, 1960). Although carefully controlled studies are not viable due to the relatively infrequent occurrence of this particular condition, positive results were obtained with hypnosis in six other patients ranging from ages 7 to 34 (Bethune and Kidd, 1961; Wink, 1961; Kidd, 1966; Schneck, 1966), and for a patient with ichthyosis simplex, another type of fish skin disease (Schneck, 1954). While the nature of Mason’s methodology, and the speed with which changes were effected, reduces the likelihood of spontaneous

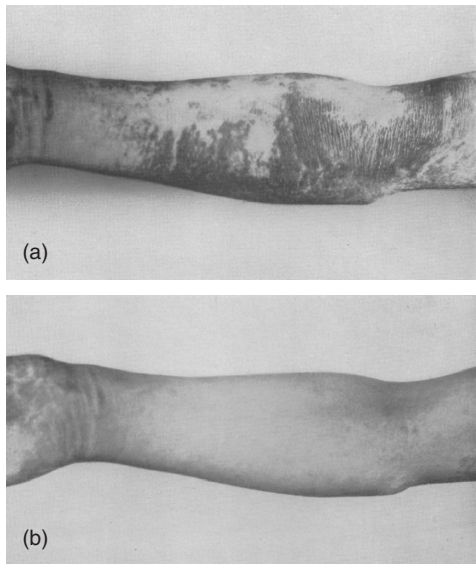


Fig. 15.2 Treatment of a patient with congenital ichthyosiform erythrodermia of Brocq (‘fishskin disease’, Mason, 1952). The top picture is prior to hypnotic treatment, and the bottom picture is after hypnotic suggestions that the skin would clear up. Pictures from ‘Hypnotism for medical and dental practitioners’, by A. A. Mason (1960, p. 65), published by Secker and Warburg, London. Reprinted by permission from A. A. Mason.

remission as an explanation, we are left with the question as to whether or not nonhypnotic suggestive techniques might be equally effective.

With increasingly rigorous studies, researchers are beginning to identify the specific variables associated with successful outcome and to separate clinical anecdote from controlled experimentation. There is insufficient information at present to assert confidently that positive results are due exclusively to hypnosis (Pinnell, 2000). Understanding how ‘mere words’ might influence changes in skin is a formidable task, but researchers in dermatology are increasingly unearthing details about the complex nature of skin, developing a framework in which skin is ‘considered as an active neuro-immuno-endocrine interface’ (Brazzini *et al.*, 2003).

15.3.2.6. Biochemical changes in the blood

A few studies have specifically examined biochemical changes in the blood following hypnosis and/or hypnotic suggestions. The approach to eliciting changes has generally relied on a procedure of hypnotically induced emotional states (Vandenbergh *et al.*, 1966; Black and Friedman, 1968; Zachariae *et al.*, 1991; Sobrinho *et al.*, 2003), though other studies have suggested food ingestion (Goldfine *et al.*, 1970), breastfeeding (Sobrinho *et al.*, 2003) and memories of previously stressful events (Adlercreutz *et al.*, 1982), or simply examined changes that result from the experience of hypnosis itself (Jana and Patel, 1965; Sachar *et al.*, 1965, 1966).

A number of studies have examined changes in blood biochemistry within the context of research on hypnotically elicited changes in immune functioning (e.g. Zachariae *et al.*, 1991; Gruzelier *et al.*, 2001a; Wood *et al.*, 2003). The results of such studies vary, and an overall summary is confounded by variability in both the nature of hypnotic procedures and the statistical analyses employed. In examining the effect of hypnotically induced emotions, Sobrinho (2003) instructed subjects to associate freely with a feeling or actual scene of their past (the themes of which were nondirected), and then examined whether the number of ‘peaks’ of various hormones during the hypnosis session differed from those during a waking (nonhypnosis) baseline condition. The study showed significantly more

surges in cortisol, prolactin and growth hormone levels during the free association periods than during the pre-hypnosis period, and specific themes of intimidation and shock elicited the greatest surges in cortisol. In another study of hypnotically elicited emotions, Zachariae (1991) induced specific emotional states under hypnosis, suggesting the vivid reliving of a prior episode in which the specified emotion (anger, depression or happiness) had been experienced. Zachariae then tested for statistical differences in hormone levels between the various emotional states and the pre-hypnosis state. Like Sobrinho, Zachariae found significant changes in cortisol as a result of induced emotions, but only during the induced emotion of happiness, which was lower than levels during anger, depression and pre-hypnosis. It should be noted that happiness was also the *last* emotion elicited in all subjects, introducing a potential order effect. Other specific differences were shown by Zachariae, such as decreased epinephrine during the depressive condition and decreased norepinephrine during all emotions relative to pre-hypnosis.

In summary, there is currently only meager evidence for the potential of hypnosis to produce biochemical changes in the blood. Even assuming that further research can reveal consistent patterns of response to hypnotically induced emotions, the relevance of hypnosis to this effect is impossible to determine via the methodologies previously employed. In the realm of altering hormones, it is unclear whether hypnotic induction of emotion adds any benefit over simply asking individuals to imagine a previous emotion-laden event. Whether providing suggestions for breastfeeding, ingestion of food or the reliving of emotional events, a no-hypnosis control group is a necessary first step in elucidating the specific role played by hypnosis.

15.3.2.7. Induction of seizures

Not all seizures are epileptic. Nonepileptic seizures are reported in 10–23 percent of patients referred to epilepsy centers. In most cases, distinguishing epileptic (caused by an electrical disturbance in the brain) from nonepileptic or *psychogenic* seizures requires constant video and electroencephalogram (EEG) monitoring, a process that is often prohibitively lengthy and expensive. Because of this, a number of physicians have

used suggestive techniques such as an injection of saline or a placebo ‘patch’ to precipitate an attack (Cohen and Suter, 1982; Flügel *et al.*, 1996). However, the use of such ‘provocation’ methods to distinguish epileptic from nonepileptic seizures is surrounded by controversy, in large part because the necessary use of deception in such techniques presents certain ethical (and perhaps legal) dilemmas, especially in terms of informed consent (Stagno and Smith, 1996, 1997; Smith *et al.*, 1997). In light of this, it has been suggested that hypnotically provoked pseudoseizures can be elicited without the need for deception, and preliminary reports have shown it to be an effective technique (Schwarz *et al.*, 1955; Kuyk *et al.*, 1995; Barry *et al.*, 2000; Martinez-Taboas, 2002; Zalsman *et al.*, 2002).

Thus, identification of psychogenic seizures can aid in selecting proper treatment, and psychotherapeutic interventions including hypnosis (Gardner, 1973; Glenn and Simonds, 1977; Gross, 1980; Caldwell and Stewart, 1981; Miller, 1983) have been shown effective in the reduction or elimination of seizures in such patients (Aboukasm *et al.*, 1998). Regardless of the provocation method used, the induction of a psychogenic seizure does not rule out the possibility of epileptic seizures. Research has shown that between 10 and 20 percent of psychogenic seizure patients also have epileptic seizures, and there is some evidence that hypnosis-induced seizures produce epileptic-like EEG patterns (Ravitz, 1982; Bryant and Somerville, 1995). Bryant and Somerville successfully induced an epileptic seizure in a patient, with characteristic EEG seizure patterns, following hypnotic suggestions for age regression to a previous seizure episode and the accompanying experience of prodromal symptoms (symptoms indicating the onset of a seizure).

In the broader realm of neuromuscular and neurological disorders, hypnosis has been reported as an effective adjunctive treatment for organic brain damage (Sullivan *et al.*, 1974), Parkinson’s disease (Wain *et al.*, 1990), stroke (Holroyd and Hill, 1989), peripheral nerve lesions (Pajntar *et al.*, 1980), cases of organic paralysis (Yensen, 1963; Vodovnik *et al.*, 1979; Lucas *et al.*, 1981), various types of dystonia (De Benedittis, 1996; Medd, 1997) and multiple sclerosis (MS; Dane, 1996; Medd, 1996). These reports, based on case studies with individual patients, provide a

first step in demonstrating the usefulness of integrating hypnotherapeutic procedures into treatment of neurological conditions. For example, with MS, various symptoms have been ameliorated via hypnosis, including spasticity (Shapiro and Kline, 1956; Brunn, 1966) and MS-associated pain (Medd, 1992; Sutchter, 1997).

In summary, hypnosis may be a useful method for inducing epileptic seizures on demand and reducing the hospitalization time required for diagnosis. Case studies of hypnosis for neuromuscular and neurological disorders identify potentially useful applications of hypnosis that can be more closely examined through appropriate scientific experimentation. However, to date, hypnotic provocation research and neurological case studies have not adequately controlled for treatment effects due to increased motivation, attention or relaxation, thus the specificity of hypnosis remains uncertain.

15.3.3. Emerging interests

The last few years have produced great developments in imaging internal systems. New technologies often lead to the revisiting of old studies, in the hopes that new modes of investigation will reveal patterns that were not observable using earlier methods. In the field of hypnosis, this change is most centrally tied to increased neuroimaging capabilities. It is not surprising, then, that new directions in hypnosis research involve many questions regarding effects in the brain (see Barabasz and Barabasz, Chapter 13, this volume, for a review of neurophysiological aspects of hypnosis). New research may also be spurred by new clinical syndromes or a new understanding of those syndromes. In this section, we review the areas of hypnosis and the body that have generated a good number of publications in recent years.

15.3.3.1. Immune system functioning

With increasing evidence that psychological stress negatively affects the immune system (Kiecolt-Glaser and Glaser, 1992; Ader and Cohen, 1993; Herbert and Cohen, 1993; Cohen and Herbert, 1996; Miller and Cohen, 2001; Kiecolt-Glaser *et al.*, 2002; Segerstrom and Miller, 2004), a number of researchers have examined whether psychological techniques

such as hypnosis might be able to ‘improve’ immune system functioning (for a review of hypnosis and immune functioning, see Hall, 1982; Goldberg, 1985; Hannigan, 1999; Gruzelier, 2002; Solloway, 2004). Some studies have indirectly indexed immune changes through self-report of symptoms or outwardly observable physiological changes that are linked to immune functioning, such as the reduction of allergic skin reactions. Increasingly, however, researchers are directly quantifying changes in humoral and cellular immunity, examining both acute changes in immune function as a result of single-session hypnotic suggestions and the potential for extended hypnotic treatments to produce longer lasting, more clinically significant, effects.

The impact of hypnosis on immune function can be broadly divided into acute intervention and extended intervention studies. While some research on acute interventions has examined the potential for hypnotically elicited emotions to influence immune function (Zachariae *et al.*, 1991), the majority of studies have examined the effect of specific suggestions or imagery. Hall (1989) reported case studies on voluntary immunomodulation involving members of his research group. Using self-induced hypnosis and imagery for increasing neutrophil adherence (a marker of white blood cell immune activity), one person was able to increase adherence by 243 percent within 7 min. Another person increased adherence after 30 min, and Hall himself increased adherence after 45 min, though two other team members did not show any increase. Recognizing the limitations of such an approach, Hall conducted further research on hypnotic-like procedures with imagery. In one study (Hall *et al.*, 1992*b*), a 45 min ‘hypnosis-like procedure’ (p. 277) with imagery of white blood cells as ‘. . . strong, powerful sharks with teeth that are attacking and destroying weak, confused germ cells . . .’ (p. 277) produced significant increases in two of seven blood measures (pokeweed mitogen and white blood cell count). Hypnotizability was not independently correlated with these immune changes but, when examining both age and hypnotizability simultaneously, the factors were a significant predictor of some of the immune measures.

The lack of a control group makes interpretation of Hall's results problematic, but he was able to address the limitation in a study examining whether prior cyberphysiological training would influence voluntary immunomodulation (Hall *et al.*, 1992a). Subjects in one group received 2 weeks of training (four sessions) in which they attempted to decrease levels of an immune component found in the saliva, secretory immunoglobulin A (S-IgA), using a hypnosis-like induction and imagery. Following the training sessions, these subjects then were given information about neutrophils and the process of adherence, and completed a 30-min session involving the '... induction of a hypnosis-like altered state and the manipulation of mental imagery' (p. 289). Blood samples were taken both pre- and post-intervention, and the 30-min session was repeated a week later. A second group received the same intervention, but without the prior S-IgA training, and a third (control) group simply rested in a bed for the 30-min sessions. Analysis of eight immunological measures revealed that only neutrophil adherence showed an increase, suggesting that the imagery specifically activated the targeted cells. This increase was only apparent during the second session, and only for the subjects with prior cyberphysiological (S-IgA) training. Indeed, subjects in both intervention groups showed *decreases* in neutrophil adherence during the first 30-min session, and this decrease was also observed during the second session (a week later) for subjects that had not received prior cyberphysiological training. The researchers summarized their findings: 'Until the trainees have experience and feedback, they will often experience a physiologic change opposite to that intended. This is usually a transitory phenomenon which is eliminated with practice'. This assertion, while perhaps premature, raises an issue that is rarely addressed in cyberphysiological research: whether individuals can be *trained* to improve their ability to modulate physiology using hypnotic suggestions.

In an attempt to separate the effect of an hypnotic induction in general from that of specific suggestions following hypnotic induction, Olness *et al.* (1989) showed that only children given specific suggestions to increase immune functioning showed subsequent increases. Those who were administered hypnosis without

specific suggestions, and those who simply conversed with the experimenter for the same amount of time, showed no increases. In light of these findings, and given that *nonhypnotic* relaxation interventions have also been shown to increase S-IgA, Hewson-Bower and Drummond (1996) examined the influence of relaxation with and without imagery suggestions. Studying both healthy children and those with recurrent upper respiratory tract infections (illness linked to deficiencies in S-IgA), Hewson-Bower and Drummond (1996) found significant increases in S-IgA for both (imagery and no imagery) relaxation groups but not for a conversation control group. However, another measure, the S-IgA/albumin ratio, increased only for the relaxation group that received imagery suggestions. To complicate matters further, subjective ratings of relaxation correlated with increases in both S-IgA concentration and S-IgA/albumin ratio.

While the previously mentioned studies attempted to alter immune measures within short periods of time (acute intervention), other researchers have examined the effects of multiple hypnosis sessions spread out over time (extended intervention). In one such study (Ruzyla-Smith *et al.*, 1995), subjects were assigned to one of three groups. Subjects in a hypnosis group were given direct hypnotic suggestions to 'imagine your white blood cells attacking and destroying germ cells in your body', suggestions that the subjects then used during self-hypnosis for the following week. Subjects in a relaxation group participated in flotation restricted environmental stimulation therapy (REST) sessions, in which they floated effortlessly in a solution of Epsom salts in a fiberglass tank after having been given the same suggestions as the hypnosis group. Finally, subjects in a third (control) group were given the same suggestions without hypnosis or REST. Analysis of blood samples showed significant immunomodulation for highly hypnotizable subjects given hypnotic suggestions, based on B-cell and T-cell counts, but not for subjects in the relaxation or control groups (see also Wood *et al.*, 2003).

Extended intervention studies have more commonly focused on the usefulness of hypnosis to counteract 'downregulation' of the immune system, particularly to examine whether hypnotic

procedures can buffer the negative effects of stress on immune function. One such study demonstrated that 3 weeks of relaxation training with hypnosis can decrease lymphocyte responsiveness to a laboratory stressor (Johnson *et al.*, 1996). In addition, a number of studies have tested the effectiveness of hypnotic relaxation training in modulating the effects of exam stress on the immune system (Kiecolt-Glaser, 1986; Whitehouse *et al.*, 1996; Gruzelier *et al.*, 2001a,b; Kiecolt-Glaser *et al.*, 2001; Naito *et al.*, 2003).

In one of these studies (Kiecolt-Glaser, 1986), medical students in a hypnosis group practiced hypnosis-relaxation procedures frequently for two and a half weeks prior to examinations, while medical students in a control group did not engage in hypnosis-relaxation sessions prior to the exams. After 3 days of exams, subjects in the hypnosis group showed a higher percentage of specific T-lymphocytes than subjects in the control group who did not practice the hypnosis-relaxation. These T-cell findings were replicated in a subsequent study, in which subjects trained in hypnosis-relaxation for 8 days before impending exams and were then tested for immune functioning 3 days *prior* to the actual exams (Kiecolt-Glaser *et al.*, 2001). However, while hypnosis-relaxation appeared to influence T-cell levels, the investigators found no effect for the training on natural killer (NK) cell activity (NK cells help to protect against cancer cells and virus-infected cells; low NK activity is associated with reduced immunocompetency).

Around the same time, Gruzelier *et al.* (2001b) demonstrated hypnotic intervention effects in a group of medical students for both T-cells and NK cells. Additionally, in order to determine whether certain types of hypnotic suggestions might be more effective than others in sustaining healthy immune functioning, Gruzelier *et al.* (2001a) subsequently compared an active imagery hypnosis approach with a relaxation-based hypnosis approach. Subjects in the active visualization group were given specific hypnotic suggestions for 'envisaging increases in NK cells and lymphocytes and surveillance by white blood cells in the form of sharks or dolphins devouring germ cells' (p. 76) while subjects in the hypnotic relaxation group were given hypnotic suggestions for relaxation, '... peace, happiness, and tranquility' (p. 76). Although this

second study failed to show the same beneficial effects for NK cells, hypnotic immune imagery suggestions appeared to be more effective in buffering the effects of stress on certain specific lymphocytes than hypnotic relaxation suggestions. The effect of stress on CD8 cells was buffered by both hypnosis interventions, compared with a control group, and was associated with hypnotizability. In addition, those with immune-specific imagery reported less illness during the exam period compared with the hypnotic relaxation group, suggesting that the buffering effect of hypnotic suggestions on immune function translates into clinically significant health measures.

The benefits of hypnosis have been supported in a more recent study of medical students during exam time (Naito *et al.*, 2003), and also in studies with HIV patients (Laidlaw *et al.*, 2004) and patients being treated for breast cancer (Bakke *et al.*, 2002). In Laidlaw's research with HIV patients, high hypnotizables were able to maintain their CD4⁺ T-cell count over the 4-week hypnosis training period, while those scoring lower in hypnotizability showed a decline in T-cell count (unfortunately, a control group was not included in the study). In a separate study (Bakke *et al.*, 2002), a group of 25 breast cancer patients showed an increase in NK cell number (but not NK cell activity) following 8 weeks of hypnotic-guided imagery, though the increases were not maintained at a 3-month follow-up. Additionally, as the authors themselves indicated, it was not possible to separate the effects of hypnotic-guided imagery from the psychological benefit of personal support resulting from the sessions.

There is some evidence that hypnosis may be effective in the treatment of herpes simplex. Case studies demonstrating reductions in outbreak recurrence (Gould and Tissler, 1984) have been bolstered by research that also assessed changes in related immune components (Fox *et al.*, 1999; Gruzelier *et al.*, 2002). Following a 6-week baseline assessment period, patients in Gruzelier's study spent 6 weeks listening to audiotaped hypnotic suggestions to enhance immune function. Recurrence of genital herpes was reduced by 40 percent and in 65 percent of patients, but Gruzelier was also able to demonstrate an increase in NK cell numbers

and function in patients that responded well to the treatment. Furthermore, those who responded also showed a significant increase in herpes simplex virus-specific NK cell cytotoxicity (the ability of the NK cells to destroy the virus-containing cells and the enclosed virus particles).

With few exceptions, the clinical significance of hypnotically produced increases in immune function is limited. For example, although one would implicitly assume that increasing immunoglobulins is a 'good thing', research on the effects of acute physical and mental stress have shown similar *increases* in S-IgA levels. Recent research from our own laboratory (Benham *et al.*, 2001) demonstrated that subjects could produce significant increases in S-IgA both after a short hypnosis session and after an acute mental stress (math) task. In the hypnosis condition (lasting 16 min total), subjects listened to a standardized hypnotic induction followed by specific suggestions for increasing S-IgA in the saliva. In the acute stress condition, subjects completed an 8-min stressful math task. Subjects experienced the hypnosis session as relaxing and the stress task as stressful, and these subjective reports were validated by significant differences in heart rate during the two conditions. While both tasks resulted in significant increases in S-IgA, it is important to note that the increases were short-lived; for both the stress task and the hypnosis intervention, the increased S-IgA levels returned to pre-task baseline levels within 8 min. Thus, it is not clear that such acute intervention practices confer any long-term immunological benefit; the clinical relevance of hypnotic immunomodulation will only be suitably assessed after additional long-term outcome studies have demonstrated its impact on health.

15.3.3.2. Accelerated wound healing

While some studies have shown hypnosis to be effective in reducing surgical recovery time or the length of hospitalization following medical procedures (Blankfield, 1991; Rapkin *et al.*, 1991; Enqvist *et al.*, 1995a,b; Mauer *et al.*, 1999), there are also a limited number of studies that have examined the potential for hypnosis to increase healing times using directly measurable indices of physiological recovery. These studies, although diverse, all surround the central topic

of whether hypnosis can expedite the process of physiological healing. The potential for hypnosis to accelerate bone healing was examined in a pilot study by Ginandes and Rosenthal (1999). Twelve patients with ankle fractures were randomly assigned to a control or hypnosis group, with the six hypnosis subjects receiving suggestions for accelerated bone healing via individual sessions and self-hypnosis audiotapes over a period of 12 weeks. Assessment of fracture healing by a radiologist blind to group assignment indicated greater bone healing in the hypnosis group, with significant differences at 6 weeks (based on an alpha of 0.25).

Various components of burn pain appear to be reduced by hypnotic suggestions (Hammond *et al.*, 1983; Van der Does *et al.*, 1988; Patterson *et al.*, 1992; Patterson and Ptacek, 1997), but there is limited research supporting the use of hypnosis for increasing recovery from burn wounds. In a study of five burn patients with symmetrical or bilaterally equivalent burns (Moore and Kaplan, 1983), patients served as their own controls with hypnotic suggestions for increased blood flow to a randomly selected side of the body. Four of the five patients had 'clearly accelerated healing' (p. 18) of the targeted side of the body (estimated as advanced by about 2 days over the control side), while the remaining subject achieved 'relatively rapid healing' (p. 18) for both of his hands. In two additional studies, research examining the effect of hypnotherapeutic interventions on physiological parameters in burn patients found little benefit other than elevated urine output in those patients who were successfully hypnotized (Margolis *et al.*, 1983; May and DeClement, 1983).

There are a few reports of hypnotic control of bleeding in hemophiliac patients (LaBaw, 1975, 1992; Fung and Lazar, 1983; LeBaron and Zeltzer, 1984; Swirsky-Sacchetti and Margolis, 1986), but little experimental evidence for its effect on healing wounds. One study, utilizing both high and low hypnotizables found no effect for hypnotic suggestion on the healing time of 5 mm cuts made in the forearms of subjects during the experimental session (Hopkins *et al.*, 1991).

In summary, while there are some interesting case studies and preliminary findings related

to hypnotically accelerated wound healing, we are far from the critical mass of evidence needed to corroborate claims of clinical efficacy. Though Ginandes and Rosenthal's (1999) study of bone healing was intriguing, its impact is lessened by a limited sample size, high alpha and lack of a task-motivated control group, and there is conflicting research on the hypnotic treatment of burns, bleeding and superficial wounds. Thus, while some support the use of hypnosis in burn healing based on positive case studies (Ewin, 1986*a,b*, 1996), reviews of this issue have generally been less positive (Van der Does and Van Dyck, 1989; Weir, 1990; Patterson *et al.*, 1996) and claims as to the effectiveness of hypnosis in reducing bleeding time are at present insufficiently substantiated.

15.3.3.3. Vomiting and irritable bowel syndrome

Hypnosis has seen a resurgence recently in the clinical treatment of gastric problems. These efforts have focused mostly on the treatment of nausea and vomiting in cancer patients (Zeltzer *et al.*, 1983, 1984, 1991; Syrjala *et al.*, 1992; Jacknow *et al.*, 1994). As Pinnell and Covino (2000) observed in their evaluation of hypnosis for nausea and vomiting, research in this area is inconsistent, and support for the effectiveness of hypnotic techniques is limited by factors such as small sample sizes and lack of hypnotizability ratings.

As a newer diagnosis, IBS has received a considerable amount of attention in the hypnosis literature. The condition is marked by abdominal pain, bloating, and alternative constipation and diarrhea. A number of case studies support the use of hypnosis in IBS. Galovski and Blanchard (2002) reported on a man suffering from 30 years of IBS. After six sessions, the authors reported a 53 percent reduction of symptoms. Six-month and 2-year follow-up revealed continued reduction in symptoms of 70 and 38 percent, respectively. Anxiety and depression were also relieved. Zimmerman (2003) suggested utilizing a metaphor of a smooth, flowing river to assist in restoring proper gut functioning in IBS. A female patient, who had experienced IBS for 1 year, reported immediate relief of symptoms after a single hypnosis session. Associated mood problems were also improved. Follow-up at 1 year showed a continued relief in symptoms.

More controlled studies similarly support the use of hypnosis in IBS treatment (Whorwell *et al.*, 1987), using suggestions of increased control over gut function. Imagery of a flowing river, coupled with sensations of warmth and relaxation in the abdomen, has been used in clinical trials of IBS. One such study, carried out by Harvey and colleagues (1989), was conducted on 33 patients with refractory IBS. Patients received four 40-min hypnosis sessions. Sixty percent of the patients responded positively to the treatment and 33 percent experienced full relief from symptoms. Progress persisted during 7-week and 3-month follow-ups. Efficacy of the hypnosis intervention was not affected by patient gender, the hypnotherapist or whether sessions were group or individual. The last point is particularly important, as the use of group hypnosis programs could be significantly more cost-effective. A quasi-experimental design by Houghton *et al.* (1996) found significant effects of hypnosis on both physical and psychological aspects of IBS. Significant improvements were attained over a waiting list control group. As with other IBS studies, the hypnotic suggestions centered on increased control over gut functioning.

IBS has also been the subject of a small number of randomized controlled trials. Thirty patients, all with severe, refractory IBS, were randomly assigned to either a psychotherapy group with a placebo or a hypnotherapy group (Whorwell *et al.*, 1984). The hypnotherapy intervention (7 sessions of 30 min) consisted of imagery (warmth in the gut) and increased control over gastric functioning. While both groups improved over baseline symptom levels, the hypnotherapy group improved to a degree significantly greater than that of the psychotherapy/placebo group. Those in the hypnosis group experienced drastic reductions in pain/distension and markedly improved well-being, as contrasted to the very slight changes observed in the placebo group. Tan and colleagues (2005) reviewed the empirical literature on hypnotherapy for IBS and concluded that the approach met the highest qualifications of efficaciousness and specificity, according to the efficacy guidelines of the Clinical Psychology Division of the American Psychological Association. More recently, Whitehead (2006) reviewed 11 clinical studies, four of which were randomized trials.

Hypnosis was found to be highly effective (87 percent average response rate), with therapeutic gains lasting for years.

Very few studies have distinguished psychological from physiological effects in IBS treatment. Given that hypnotherapy also consistently relieves IBS-associated psychological complaints, it is possible that hypnosis works by modifying attention to gastrointestinal sensations and by changing associations and meanings attached to those perceptions. This hypothesis that hypnotherapy works via psychological, rather than physiological, mechanisms was directly tested in a study by Palsson and colleagues (2002). Rectal pain thresholds, rectal smooth muscle tone and autonomic functioning were unchanged by hypnosis, while self-reported markers of illness severity (pain, bloating, etc.) were all significantly reduced. Despite the lack of evidence for physiological change, evidence does support hypnosis for IBS, in that quality of life does seem to be improved by the treatment.

15.4. Revisiting core concepts and suggestions for future research

At the beginning of this chapter, we argued that the efficacy of hypnotic procedures for altering physiology can only be proven by: (1) demonstrating replicable effects in controlled studies; (2) demonstrating that the effects are due to hypnosis and related to hypnotizability; and (3) demonstrating that the effects are at least as powerful as alternative psychological techniques, particularly those that require less training and/or time to administer. While some areas have shown more consistency than others, hypnotic cyberphysiology research has yet to establish reliably the *relevance* of hypnosis. As discussed previously, the relevance of hypnosis can be more convincingly argued by demonstrating that effects are not produced simply by relaxation or by the same suggestions given in a waking state.

While many studies have simply ignored the confound of relaxation, there are a number of tactics that can be used to separate the effects of hypnosis from the effects due to relaxation. One approach, as exemplified by Olness *et al.* (1989),

is to compare the effects of specific suggestions under hypnosis with a hypnotic relaxation condition without specific suggestions for alterations in physiology. Olness found that only the group with specific hypnotic suggestions showed an increase in immune measures; no increase was shown for the hypnosis group without specific suggestions. A similar approach was used by Gruzelier *et al.* (2001a) who showed that specific hypnotic suggestions for immune imagery were more effective in moderating the effects of stress on immune function than hypnotic suggestions for relaxation, and Williams (1974) found an increase in breast size following specific suggestions, but not after hypnosis without specific suggestions. Demonstrating consistency in these sorts of studies will be a first step toward challenging the notion that physiological effects are simply due to relaxation.

Another technique to separate hypnotic effects from relaxation effects, admirably employed in Mason's early study of the skin disorder congenital ichthyosiform erythroderma (1952), is to demonstrate site-specific changes due to hypnotic suggestions. Given that the physiological effects of relaxation are systemic, multiple baseline designs such as Mason's (in which the progression of skin healing coincided with specific suggestions) allow the researcher to differentiate relaxation effects from the effects of specific suggestions under hypnosis. If the resultant changes are limited to the suggested site and not the entire body, one can rule out relaxation as the sole cause. Similar approaches have been used in the treatment of warts, though with mixed results. Site-specific changes can also be directed at simultaneously increasing some measure at one site and decreasing it at another, such as temperature or DTH skin reactions. Indeed, the approach of differentially increasing or decreasing some physiological measure can be used in a variety of designs, whether they be time-series, independent groups or repeated-measures, to help in differentiating the effects of hypnosis from those of relaxation (Chapman *et al.*, 1959; Ikemi and Nakagawa, cited in Barber, 1978; Zachariae *et al.*, 1989; Zachariae and Bjerring, 1993).

Although most studies have used relaxation-based inductions, the confound of relaxation can also be eliminated by using alternative

nonrelaxation-based inductions such as the active-alert hypnotic induction (Banyai and Hilgard, 1976). However, while this certainly would rule out relaxation effects and has been examined in this regard in relation to hypnotic analgesia (Miller *et al.*, 1991), psychophysiological studies generally rely on stable baselines obtained during quiet rest, and thus the active-alert approach may not be the most practical technique.

An alternative option is a frequent sampling technique that examines the pattern of changes during the various stages of a hypnosis protocol. The applicability of the technique rests on two conditions: (1) that frequent physiological measures can be obtained; and (2) that the measured physiological variable is anticipated to change within a short period of time. Data collection and presentation using this method have traditionally relied upon physiological variables that can be measured continuously, such as temperature, skin conductance, respiration or EEG (e.g. Dikel and Olness, 1980; Raynaud *et al.*, 1984; Mück-Weymann *et al.*, 1997), though it is possible to obtain multiple measures from physiological variables that must be sampled independently at discrete time intervals, such as blood or saliva samples.

As an example, consider the measurement of S-IgA, an immunoglobulin found in saliva.

While researchers commonly rely on pre- and post-measures of immune functioning, one of the authors (G. B.) has shown that frequent sampling of saliva can reveal the 'pattern' of changes in S-IgA following an acute stress task (Benham, in press). The frequent sampling method could be applied to a protocol in which individuals sit quietly for 10 min, then undergo a hypnotic induction, are provided with specific suggestions for alterations in S-IgA, followed by the deinduction and another 10 min of quiet rest. By obtaining saliva samples every 2 min, the pattern and timing of changes during each phase can be examined. Such a technique would provide a data set far richer than those generated by pre- and post-treatment designs and would enable researchers to determine whether the hypnotic induction, the specific suggestions or perhaps even the deinduction led to changes in the dependent measure. Measures during the recovery phase would also enable researchers to examine the rate at which changes returned to baseline levels.

Two alternative outcomes are shown below to illustrate possible results from such a study. In the first scenario, Figure 15.3a, the results suggest that S-IgA increased as a result of the hypnotic induction and were not influenced by the specific suggestions. Figure 15.3b suggests

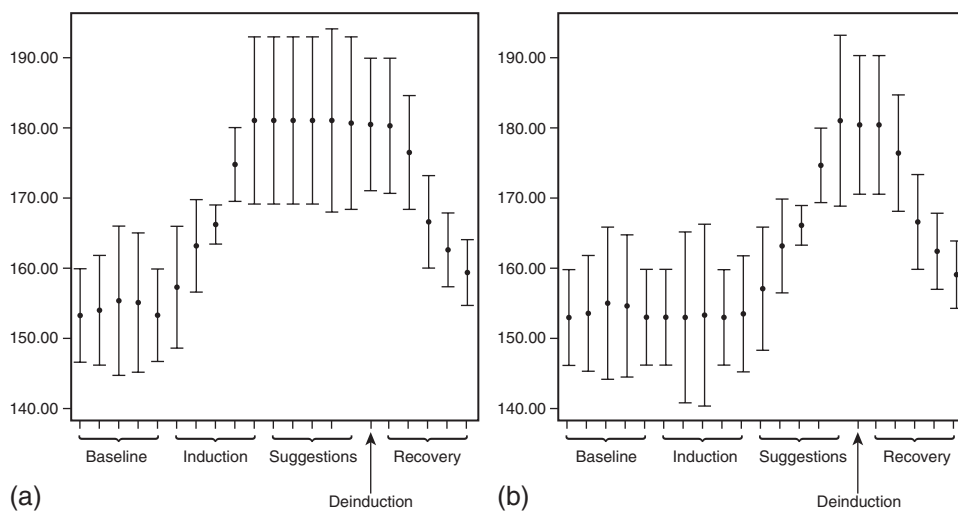


Fig. 15.3 Hypothetical results for frequent sampling methodology. (a) Changes in secretory IgA occurring as a result of the hypnotic induction. (b) Changes occurring as a result of specific suggestions.

that the hypnotic induction had little effect on the immune measure, but that specific suggestions caused a rapid increase. However, as addressed in the introductory sections of this chapter, excluding the influence of simple relaxation is not sufficient to prove the specific role of hypnosis in effecting change. The proposal to compare waking suggestions with those given after a formal hypnotic induction is complicated by an inadequate definition of hypnosis, thus one alternative approach to support the specific role of hypnosis in effecting change is to examine whether observed changes are related to an individual's level of hypnotizability.

15.4.1. Hypnotizability and physiological change

A small number of studies have provided some support for the role of hypnosis and hypnotizability in effecting physiological change. Piedmont (1983) found an association between hypnotizability and the hypnotic control of peripheral temperature (Piedmont, 1983), Johnson *et al.* (1996) demonstrated a correlation between the Creative Imagination Scale and changes in immune function, and Gruzelier *et al.* (2001a) found an association between the HGSHS:A and immune function (hypnosis buffered the effects of stress on immune cells). In his study of herpes simplex, Gruzelier also showed an association between hypnotizability and increases in immune function, though it should be mentioned that improvements in health were not restricted to patients with high hypnotic ability. Following 4 weeks of self-hypnosis, highly hypnotizable HIV patients showed significantly higher T-cell counts than low hypnotizables (Laidlaw *et al.*, 2004). Tausk and Whitmore (1999) failed to find any differences between hypnosis with and without specific suggestions for improvement in psoriasis, but high hypnotizables showed significantly greater improvement. High hypnotizables also showed less stress-induced vasoconstriction than lows following hypnotic relaxation procedures (Jambrik *et al.*, 2005).

While there is some support for the association between hypnotizability and the extent of physiological change following hypnotic suggestions, there are also numerous studies that have

failed to find such a relationship. Hypnotizability was found not to be associated with cardiovascular changes (Forbes and Pekala, 1993), wart loss (Spanos *et al.*, 1988), reductions in skin reactions to histamine (Laidlaw *et al.*, 1996) or changes in S-IgA (Olness *et al.*, 1989). Hypnotizability was not correlated with the buffering effect of hypnotic relaxation prior to exams on T-cells (Kiecolt-Glaser *et al.*, 2001), nor with increases in neutrophil adhesiveness in either of two studies by Hall *et al.* (1992a,b), though an age by hypnotizability interaction was predictive of change in immune measures in one of the studies (Hall *et al.*, 1992b). Holroyd and colleagues (1982) found no effect for hypnotizability on hypnosis or biofeedback lowering of blood pressure and skin conductance, nor reductions in bleeding following hypnotic suggestions (Hopkins *et al.*, 1991) or response to hypnotherapy treatment of incontinence (Freeman, 1987).

Thus there is no clear association between hypnotizability and hypnotic cyberphysiological success, not even when singularly focusing on specific changes such as research on warts or DTH. While this may at first glance weaken the claim that hypnosis is a central factor for eliciting physiological change, it is important to consider the nature of hypnotizability scales. Scales are commonly built around suggestions for alterations in cognition and behavior and, while some have proposed hypnotic ability is best understood as a single factor, others have suggested two-factor, three-factor and, more recently, four-factor conceptualizations (Peters *et al.*, 1974; McConkey *et al.*, 1980; Balthazard, 1993; Sadler and Woody, 2004; Woody *et al.*, 2005; see also Woody and Barnier, Chapter 10, this volume).

Additionally, these factors are based on analysis of the responses to items included in the scale which, to reiterate, are behavioral and cognitive suggestions. If hypnotizability is not a unitary factor underlying all aspects of hypnotic response, it is not unreasonable to propose that hypnotic cyberphysiological ability may be an additional hypnotic factor, unrelated to the capacity to respond to behavioral and cognitive suggestions and thus untapped by traditional scales. This echoes the notion that some individuals may be predisposed to respond to cyberphysiological suggestions, but whether or not such an individual

ability is ‘hypnotic’ is an independent question, inseparably linked to the definition of hypnosis. In sum, hypnotic cyberphysiological ability may show little relationship with current measures of hypnotizability.

15.4.2. Relative efficacy of hypnosis versus other psychological techniques

As we noted at the beginning of this chapter, if consistent cyberphysiological effects can be attributed to hypnosis, it is important then to determine whether hypnotic techniques are of equal or greater efficacy than alternative psychological procedures. As we also noted, and as highlighted in our review, few studies have directly compared the ability of hypnotic techniques and alternative techniques—whether relaxation, biofeedback, mediation or subtle energy therapies—to alter physiology. There is growing evidence from outside the field of hypnosis that nonhypnotic psychological techniques can influence physiology. The relative efficacy of hypnotic and nonhypnotic techniques remains to be addressed. This can be accomplished most effectively through designs in which one or more nonhypnotic techniques are directly tested against hypnotic techniques. At a minimum, future research must use comparable populations, designs and measures.

15.5. Summary and recommendations

In delineating the rich history of studies in hypnotic alterations of physiology, one is struck by the diversity of processes and conditions investigated; a factor that simultaneously represents the greatest strength and the greatest weakness in this field of research. For, while hypnosis has been examined in relation to immune, cardiovascular, integumentary, digestive, nervous and endocrine systems, the scope of questions asked and the array of methodologies used to investigate them have resulted in an assortment of studies that fail to advance the field systematically. This lack of logical progression has resulted in a failure to address some of the most fundamental questions adequately, as suggested in the previous section.

While a practicable definition of hypnosis may prove challenging, it is possible to advance

the field of cyberphysiological hypnosis by addressing various important questions raised by prior research and thus eliminating potential confounds. Using the healing of an experimentally induced cut to the skin as an example, there are a number of questions that arise:

1. Does the addition of a hypnotic induction increase the rate of healing above and beyond the effects of specific suggestions without an induction?
2. If so, can believed-in efficacy (potentially heightened by the hypnotic context) be ruled out by either providing the same suggestions in association with an equally convincing context or assessing subjective ratings of believed-in efficacy?
3. Can suggestions be used to increase healing rates or decrease healing rates in a direction determined by the specific suggestions used?
4. Can targeted hypnotic suggestions produce localized (nonsystemic) changes, such as increasing wound healing on the right arm while not affecting healing on the left arm?
5. Does the nature of hypnotic suggestions (direct suggestions for blood clotting versus indirect suggestions for imagining the arm in an ice bath) have a differential effect?
6. Does individualizing suggestions/imagery have a greater effect than using standardized imagery?
7. Do established measures of hypnotizability correlate with healing time?
8. Are there reliable individual differences, outside of hypnotizability, in the way people respond to the suggestions (i.e. personal cyberphysiological propensities)?
9. Do the effects translate into clinically significant results?
10. Can any biochemical or physiological (e.g. cardiovascular) markers be identified that suggest a *mechanism* for observed changes?
11. Does hypnosis produce greater effects than meditation, biofeedback, relaxation, subtle energy therapies, etc?

Such questions could be addressed in controlled studies, while what have traditionally been handled as descriptive case studies could

be improved by better integrating objective dependent measures and by using time-series methodologies (Borckardt and Nash, 2002).

If the Royal Commission of King Louis XVI were charged with investigating the claims of hypnotists today, what verdict would they render? Contemporary researchers are more cautious in their proposition of the mechanism by which physiological changes occur—beyond the fields of psychoneuroimmunology and psychoneuroendocrinology, we do not propose a system of physics (animal magnetism) to explain these changes. Thus, a test of hypnosis would be based not on mechanism, but on method. We would need to demonstrate that the procedure of hypnotic suggestions is the important element in creating physiological change. And yet, our definition of hypnosis is still not settled. If a formal hypnotic induction is not required, how do we differentiate hypnosis from waking suggestions? How do we adequately control for methods that are not hypnosis? What would the Royal Commission conclude?

Given that hypnotic interventions are often used as a component of a more complex treatment and that certain studies use hypnotic techniques that are not explicitly defined as such, a clear picture has not yet emerged as to the importance of hypnosis as a primary component in producing physiological changes. However, with the encouraging preliminary results of well-designed studies, researchers remain optimistic about demonstrating the usefulness of hypnotic techniques, above and beyond that of other psychological interventions. Alongside these efforts at validating efficacy, future research will have to elucidate the mechanism by which verbal suggestions during hypnosis might affect physiological changes.

Summarizing the nature of experimental designs in many psychoneuroimmunological studies, Gruzelier acknowledged limitations that arguably apply equally to other areas of cyber-physiological research, suggesting that ‘. . . investigations have been carried out with meagre resources by dedicated pioneers’ (p. 161, Gruzelier, 2002). As the Royal Commission warned over 200 years ago, ‘Man seizes, abandons, takes up again the error that gratifies him’ (Franklin *et al.*, 2002, p. 359). If, as Mesmer stated, truth is a path traced between errors, the duty of these dedicated

pioneers is to develop and apply a systematic approach based on standardized methodological designs so we can avoid repeating the errors of the past.

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SECTION IV

Clinical hypnosis: treatment and consultation

CHAPTER 16

Psychoanalytic approaches to clinical hypnosis

Elgan L. Baker and Michael R. Nash

16.1. Introduction

Throughout his life, Freud was quick to acknowledge his intellectual debt to hypnosis, especially the work of Charcot (1890) and Bernheim (1889). However as a young Freud sought to formulate a distinctive clinical theory to guide technique, it was important, even necessary, for him to define what psychoanalysis is *not*—and from the latter years of the nineteenth century Freud was very clear that psychoanalysis is not hypnosis, nor should hypnosis be used in psychoanalysis. Most importantly, for Freud, psychoanalytic patients improved because the unconscious was made conscious, not because they were responding to suggestion. It was natural enough that hypnosis came to be the all-purpose foil for psychoanalysis because when psychoanalysis was born, hypnosis dominated the landscape of clinical and experimental psychiatry. If psychoanalysis was to have its own identity, hypnosis as technique had to be jettisoned. After all, to the extent that suggestion is unexamined transference, it is anathema to the uncovering ethos of analysis. Indeed Freud was fond of labeling the successes of nonanalytic therapies as the product of ‘mere suggestion’; for him the only alternative to the ‘gold of analysis’

was the ‘copper of suggestion’ (sometimes he mentioned the possibility of an ‘alloy’, Freud, 1918, p. 168). But by categorically rejecting hypnosis, the psychoanalytic community lost a tool which, when employed judiciously, can support the working alliance, soften defenses and enable patients to examine their emotional life productively. In this chapter we discuss the ways in which hypnosis can be used in psychoanalytically informed therapies across a range of therapeutic aims and patient diagnoses.

16.2. The nature of hypnosis and its applicability to therapy

The most current psychoanalytic models of hypnosis (Nash, Chapter 8, this volume) rely on two aspects of psychoanalytic metapsychology: early analytic constructs rooted in drive theory, conflict and insight; and later developmental principles grounded in attachment, identity and the therapeutic relationship.

16.2.1. Hypnosis as topographic regression

Well before the publication of ‘Interpretation of Dreams’ (1900), Freud construed the hypnotic

state as a form of a topographic regression, a construct rooted in the notion of homeostasis, conflict and compromise. Freud's topographic regression (Freud, 1917) was based on his understanding of the reflex arc in neurology and physiology. Freud described topographic regression as a reverse movement along a path 'from the region of thought-structures to that of sensory perceptions' (Freud, 1905/1960, p. 162); 'in this process thoughts are transformed into images' (Freud, 1917, p. 227)—a backward course that results in a transformation of thoughts into visual imagery (Freud, 1933). Freud noted that the regressive shift from thought to imagery carries with it a shift in form, from secondary process to primary process thinking (Freud, 1916–1917, 1917). Indeed a cornerstone of psychoanalytic theory is that the topographic regression we observe in pathological conditions is similar to the mentation we encounter among normal individuals when they dream or are in a hypnotic state. Hence when we use hypnosis in psychotherapy, we induce a topographic regression that (when applied wisely) supports a number of cognitive, affective and relational shifts that are fully congruent with the aims of psychoanalytic work:

1. Thought processes shift in the direction of symbolic, primary process mentation, which can soften defenses and lead to productive expression of repressed material.
2. Primary process content is typically more affect-laden and emotionally compelling, which can support therapeutic abreaction and mastery of difficult material.
3. The relaxation of ego functioning sometimes involves dramatic shifts in somatic experience involving boundary, image and permeability. Attention to this material can help patients become more attuned to routinely disavowed body experience.
4. The displacement and condensation inherent in primary process mentation can be used to help patients encounter transference material in a supportive environment without being overwhelmed.
5. To the extent that the hypnosis is managed as a regression in service of the ego, the patient becomes more able to identify neurotic

deployment of defenses and to examine ongoing emotional experience productively.

16.2.2. Hypnosis as supporting shifts in the experience of identity and self

In his later writings on metapsychology and the clinical technique of psychoanalysis, Freud (1923, 1926) began to focus on the organization/maturation of the ego, the formation of identity and the developmental unfolding of attachment. These ideas formed the foundation of contemporary ego psychology and object relations theories that have contributed to a fundamental change from concern with the management of instincts and their vicissitudes to primary concern with the maturity, stability and structural integrity of the ego. This shift in the metapsychological understanding of psychopathology has also produced changes in our view of the hypnotic state and how it is utilized in psychoanalytically informed treatments. These changes include an increased emphasis on the contemporary, nontransference aspects of the therapeutic relationship and an appreciation for how hypnosis can support: (1) the emergence of adaptive interpersonal involvement; (2) the use of therapeutic process to support adaptation and mastery rather than primarily being in service of regression and uncovering; (3) an emphasis on affective containment, modulation and neutralization rather than abreaction and catharsis; and (4) increased technical attention to the facilitation of identification and introjective process during treatment.

An integration of the drive-based (i.e. topographic) notion of hypnosis with the more relationally based developmental model, extends the therapeutic reach of clinical hypnosis (Baker, 1981, 1983a, 1983b). This integrative approach emphasizes the potential of hypnosis to facilitate structural maturation and mastery, as well as its usefulness in expression of affect. Below is an outline of how hypnosis can be used in psychodynamic therapies from an integrative psychoanalytic perspective.

- I. Hypnosis is typically utilized in an auxiliary fashion and is indicated for introduction as a therapeutic technique at several junctures in psychotherapy.

1. Management of specific resistance.
 2. Enhancement or modification of transference.
 3. Structuralization of the contemporary therapeutic alliance.
 4. Modulation of affective intensity, especially when it is disruptive
 5. To support therapeutic process and the patient's ego functioning.
 6. Support of specific ego functions during regression (rehearsal in fantasy; gratifying imagery; reinforcement of boundaries).
 7. Management of dysphoric or disruptive rumination.
 8. Uncovering and remembering (dream work; age regression; projective techniques; automatic writing).
 9. Symptom management and specific suggestion.
- II.** The dynamics of the hypnotherapeutic process unfold along several interactional dimensions and focus on symptom resolution, intrapsychic structural alteration, developmental maturation and the integration of a mature, adaptive and realistic self-representation. The phenomenological arenas of this interactive process include the following:
1. The relationship: the development of a safe, gratifying, dependable and facilitating emotional climate
 - ◆ Relaxation supports comfort and a sense of security in relational connectedness.
 - ◆ The hypnotic experience narrows the gap between the 'all-powerful' other and the 'helpless victim' patient by establishing neutrality, equanimity and shared controls of the trance and by structuring selfmastery and success experiences in hypnosis.
 - ◆ Hypnosis evokes intense archaic and primary process material with associated affect which the patient experiences in a structured and supportive environment without being overwhelmed.
 - ◆ Structured and modulated transference experience brings intrapsychic reconstruction and regrowth.
 2. Cognitive understanding—insight and control is fostered via interpretation, suggestion and the specific uses of conscious and pre-conscious imagery.
 3. The incorporation of the contemporary experience with the therapist and the introjection of representations of the therapeutic alliance, serve a mending, integrative function and foster developmental maturation ('analytic introject')
 4. The enhancement' control and direction of motivational forces supports a positive sense of self and the development of a sense of mastery.
- III.** Specific goals of hypnotherapy for insight-oriented treatment include:
1. Ego support—the identification and enhancement of the boundaries and adaptive functions of the person.
 2. Ego mastery—the development and supportive maturation of the person's defensive functions, including the differentiation and modulation of affect and impulse.
 3. Verbalization, ventilation, catharsis and abreaction—the discharge and development of strategies for managing conflict and tension, as well as the support of secondary process and observing ego functions.
 4. Neutralization—the freeing of energy for adaptive functioning.
 5. Enhancement of relatedness—the development of mature capacities for meaningful and reciprocal interpersonal intimacy with resolution of conflicts relating to the developmental tasks of attachment, separation and individuation.
 6. Confrontation—the correction of distortions in the representation of self, others and internal and external reality, and the resolution of destructive and repetitious behavioral reactions to these distortions.
 7. Internalization—support of an integrated, gratifying internal representational of the world.

8. Regulatory processes—enhancement of affect regulation.
9. Autonomy—the support of self-control, independence and secure separateness.
10. Integration—the internal integration of insight and change, as well as the experience and process of change, with subsequent growth, maturation and creative productivity.

16.3. Utilization of hypnosis in three types of psychoanalytically informed therapies

How hypnosis is used in an applied setting depends on the nature of the presenting problem, the patient's characterological maturity, the therapeutic aim and a host of contextual factors (e.g. health, family, financial, temporal, geographic). Hence no categorization scheme can capture the richness and complexity of psychotherapy as it is delivered in practice. However, for pedagogic reasons, we here impose a pragmatic typology of therapeutic scenarios that we believe will help readers decide whether, when and how they might use hypnosis in a psychoanalytic psychotherapy. Table 16.1 summarizes three types of psychoanalytically informed treatments for which hypnosis might be used adjunctively: short-term problem-focused therapy; insight-oriented therapy; and intensive long-term therapy. Note that each treatment type is associated with typical patient characteristics, treatment aim and duration (column 1). In addition, how hypnosis is used in the therapeutic process is broken down into its supportive and expressive aspects (columns 2 and 3). Supportive processes refer to (1) those aspects of the therapy that reflect the quality of the patient's experience of the therapist; and (2) a focus on strengthening adaptive coping strategies. For supportive processes the emphasis is on relationship and containment, albeit with the expectation of change. Expressive processes set the stage for the patient to experience previously disavowed emotional material which is unwittingly enacted within and outside the therapy. Here the emphasis is on interpretation of defense

and engagement of emotion, albeit within the context of a safe holding environment. All three types of therapies incorporate supportive and expressive processes; however, the balance shifts across treatment types. We now discuss how hypnosis can be used in each type of therapy, illustrating with case examples.

16.3.1. Short-term problem-focused therapy

Regardless of theoretical orientation, when a clinician is identified in the community as someone who uses hypnosis, referrals for hypnosis will be predominantly of this type: short-term problem focused, with relatively intact patients who seek to control some aspect of their physical, behavioral or emotional life. The presenting problems might be pain (chronic or acute), nicotine addiction, dental anxiety, irritable bowel syndrome, asthma or skin disorders. Other clinical chapters in this book cover this clinical terrain thoroughly and admirably from a nonanalytic perspective. Here we describe how these problems can be treated from a psychoanalytic-informed position.

As per Table 16.1, supportive strategies are used with these problems, assuming patients are relatively free of complicating psychiatric disorders. Further, the supportive techniques in these short-term approaches are almost exclusively designed to strengthen intact defenses and to reinforce extant coping strategies. This is in contrast to the supportive techniques of structural repair used with the regressed patients encountered in intensive long-term therapy. Short-term problem-focused hypnotherapy requires the patient to have a relatively stable sense of identity, and a workable capacity to regulate affect. The task of the therapist then is to discern the patient's defensive style and to enable the patient to deploy these defenses more effectively, usually via a self-hypnosis procedure which can be used as needed. In general the aim is symptom removal, symptom substitution or symptom amelioration (decreased severity, intensity or frequency of the symptom). Generically speaking, these treatments move through three intervention phases: enhanced self-efficacy; tension reduction; and establishment/rehearsal of 'better alternatives.'

Table 16.1 Hypnosis in the therapeutic process

| Type of treatment | Supportive aspects | Expressive aspects |
|------------------------------------|--|---|
| Short-term problem focused | <p><i>Aim:</i> modulate disruptive sensation/affect, support mastery (e.g. acute pain, chronic pain, anxiety, smoking cessation, physiological conditions) <i>Patients:</i> normal to neurotic <i>Duration:</i> Brief</p> <p><i>Predominantly supportive</i> techniques designed to strengthen intact defenses and to reinforce ego-syntonic adaptive coping strategies. Rehearsal in fantasy; gratifying imagery; reinforcement of boundaries; management of dysphoric or disruptive rumination; direct suggestion; self-hypnosis; supports mastery and more effective use of pre-existing defenses</p> | <p>Typically limited to the initial exploratory phase of brief hypnotic intervention to determine patient's relational and defensive style. Can address and utilize core conflictual material in crafting an intervention optimally congruent with the patient's characterological maturity (e.g. some types of psychogenic pain, physiological and other medical conditions).</p> |
| Insight-oriented | <p><i>Aim:</i> resolve and ameliorate clearly delimited and/or encapsulated neurotic symptoms in a focused therapy <i>Patients:</i> neurotic spectrum <i>Duration:</i> intermediate</p> <p>Focus on positive aspects of the working alliance and transference. Provide enough containment to support expressive aspects, re-enforcing of positive expectations and attributions. Softening and relaxation of defenses</p> | <p><i>Predominantly expressive</i> techniques designed to provide insight and working-through of significant arenas of conflict. Involves the use of hypnosis within the context of a traditional transference-mediated psychotherapy. Hypnosis is used to facilitate uncovering, regression, working through and integration. Discharge of disruptive affect and related conflict or trauma via affect bridge. Alternated with suggestions for containment and mastery</p> |
| Intensive long-term therapy | <p><i>Aim:</i> insight and working-through of significant arenas of conflict with patients who have pervasive impairment of self-representation and capacity for intimate attachment <i>Patients:</i> severe neurotic to psychotic spectrum <i>Duration:</i> long-term</p> <p><i>Predominantly supportive</i> strategies designed to enable the patient to gradually develop a capacity to tolerate the therapeutic relationship, to sustain an internal representation of the therapist, and to locate emotional experience in the context of therapeutic interaction. Techniques support structural maturation, boundary demarcation, and mature attachment.</p> | <p>Expressive interventions are titrated carefully. Regressive aspects of hypnosis (e.g. topographical regression) are rarely used. Instead hypnosis is used to demonstrate that ongoing sensations or emotions can be tolerable, and even gratifying, when shared in the context of a safe interpersonal environment.</p> |

To enhance self-efficacy the therapist initially uses hypnosis to support relaxation, imagery and ideomotor or sensory focusing. This is usually accomplished via techniques described in Nash (Chapter 8, this volume). During or soon after the patient's first experience with hypnotic induction and suggestion, the therapist then focuses on developing the patient's capacity for self-observation, self-awareness and self-regulation, elaborating experiences of success and developing related increases in self-esteem. Within the first two or three sessions, the work moves to the tension reduction phase where relaxation and imagery are used to reduce the level of stress and anxiety and to dilate (and reveal) related defenses. The functional value of the symptoms usually begins to emerge during this phase. Up to this point, the intervention is exploratory.

The core challenge of this work is to establish a more adaptive coping strategy to replace the symptom, and then to rehearse this 'better alternative' via self-hypnosis. Over a period of several hypnosis sessions, the patient and therapist craft imagery and suggestions that are congruent with the patient's defensive style and are emotionally compelling to the patient. In framing an optimal 'better alternative', the therapist is mindful of six principles:

1. Principle of syntonicity: choose strategies consistent with the patient's defensive style (e.g. hysterical, depressive, obsessive-compulsive, paranoid).
2. Principle of alternation: alternate suggestions and rehearsal with relaxation and deepening techniques. Repeat the work several times across the course of a single session.
3. Principle of dynamic equivalence: choose a strategy rooted in developmental tasks similar to the target symptom.
4. Principle of linguistic equivalence: elaborate the new strategy using the symbolic language of the patient and related primary process themes.
5. Principle of integration: in order to facilitate maintenance and generalizability of the behavior change, integrate this into the patient's conscious self-representation via imagery, suggestion and 'time projection' (hypnotic suggestion to imagine oneself in the future).

6. Follow-up: offer 'booster sessions' after the treatment is completed

16.3.1.1 Short-term problem-focused psychotherapy: case 1, a cystoscopy

Todd was a single 25-year-old male patient who was referred to the senior author's office following diagnosis and treatment for bladder cancer. Two months prior to referral he observed blood in his urine and promptly consulted his physician. Eventually he was examined by a urologist and underwent an in-office cystoscopic procedure. Cystoscopy (passing a tube-like instrument through the urethra and into the bladder) is quite painful for most men, and for some exceedingly so. Todd found the procedure to be an excruciating ordeal which at one point involved two nurses holding him down with considerable force. A malignant tumor was discovered, and eventually removed. As the prognosis for this particular type of bladder cancer is quite good, Todd was relieved to hear that radiation therapy and chemotherapy were not necessary. He was, however, profoundly alarmed when he was informed that he must adhere to an intensive monitoring protocol that requires he undergo one cystoscopy every 3 months for the next 5 years. Todd was not pleased. He was in fact so distressed that the urologist suspected he might not comply. As repetitive general anesthesia was out of the question, Todd was referred by the physician to E. L. B. to determine options for pain management.

Following a brief history and evaluation, the therapist considered Todd to be a good candidate for a brief intervention. The next cystoscopy was scheduled 8 weeks after our first session. Todd was receptive to the notion of using hypnosis to control pain, so the therapist administered a trial hypnotic procedure as described in Nash (Chapter 8, this volume). Todd was quite responsive to hypnosis, especially to suggestions requiring him to alter the experience of his body. Todd's defense style was flexible, but primarily histrionic. His defenses were organized around body-based themes of supply, with repressed material expressed somatically. During the first three sessions, Todd became quite accomplished in displacing his somatic sensations (e.g. tingling, heaviness, warmth, cold)

from one part of his body to another. During hypnosis he would imagine his father's hand on his shoulder. The warmth would move down his arm to his hand. By the fourth session Todd was able to experience complete anesthesia in his left hand, and he found he could transfer this 'numbness' from his left hand to his right. During the therapy hour he would rehearse this effect many times: going into hypnosis, experiencing the anesthesia in his hands, and being brought out of hypnosis. During the fifth session, he began gradually to expand the anesthetic effect across a large but unarticulated portion of his lower body (about from his ribs down to his knees), and he was instructed to use a relatively rapid self-hypnosis procedure (see Nash, Chapter 8, this volume) on a twice-daily basis, 5 min each time. Sessions 6 and 7 began with a review of his practice experiences during the week, and eventually moved to hypnosis proper, with Todd using his self-hypnosis procedure and signaling to the therapist when the numbness was consolidated. Interestingly, Todd always began his hypnosis with the feeling of his father's hand on his shoulder.

Session 8 was scheduled 20 days after the cystoscopy. Todd reported that when he arrived at the physician's office the staff were prepared, with two burly male nurses at the ready. He informed the physician that he wanted to use self-hypnosis, and asked if he would give Todd about 60 s notice before starting the procedure. The physician did so, Todd used his self-hypnosis, and the 10-min cystoscopy went without a hitch, with no observed lesions. Todd reported he felt nothing, other than the pressure as the probe 'popped into my bladder'. When the procedure was complete, Todd brought himself out of hypnosis, feeling particularly satisfied that the nurses had had nothing to do. E. L. B. offered follow-up sessions if Todd wanted them. Todd politely declined.

16.3.1.2. Short-problem-focused psychotherapy: case 2, trichotillomania

A 29-year-old married female accountant consulted the junior author (M. R. N.) regarding a life-long habit of pulling out her eyelashes (always with her right hand and always rolling the hair between her forefinger and thumb). Kristi was otherwise asymptomatic, with no

indication of a broader psychiatric disorder, and no generalization of the hair-pulling to other areas of her body. She never knew a time when she did not pull her eyelashes. As is often the case with trichotillomania, the patient's defenses were obsessive, with recurrent interpersonal themes of defiance and submission. Much, though not all, of her life was organized around undoing, counter-dependency and a considerable interest in orderliness and parsimony. Interestingly, Kristi's defiance indirectly led to her seeking therapy. To the distress of her upper middle-class family, Kristi had embraced a pentecostal denomination which encouraged speaking in tongues (i.e. glossolalia). Her high-church, professional parents were mortified. Indeed Kristi was so proficient at glossolalia that she wondered whether she might be a good candidate for hypnosis. She wanted to find out whether someone could use hypnosis to make her hair-pulling go away.

The therapist detected the invitation to become part of yet another defiance-submission enactment, and responded 'its interesting that in church you discovered you possessed something good and powerful all along, and you wonder if there is more'. Kristi's glossolalia experiences served as a template for her experience of hypnosis. The initial hypnotic procedure revealed her to be highly responsive. Although her behavioral responses were idiosyncratic (e.g. arm lowering suggestions resulted in her arm actually rising), Kristi reported being profoundly relaxed, keenly attuned to her sensations and 'bathed in light'. Following termination of this first hypnotic procedure, Kristi again likened hypnosis to the way she felt before speaking in tongues, i.e. 'receptive to whatever I am feeling. Just waiting'. It occurred to the therapist that Kristi's eyelash compulsion was almost certainly a desperate attempt to self-soothe—a muted version of the self-abuse behaviors we see with borderline patients. However, Kristi's counter-dependent style seemed to leave few avenues for expression of her disavowed passive dependent yearnings. Her glossolalia was the most notable exception. In the religious context she could encounter her need for comfort and allow that need to be satisfied. Could we fashion a self-hypnosis procedure for Kristi which would serve as an alternative to lash pulling;

one which would satisfy her passive dependent needs without overwhelming her defenses?

In subsequent hypnosis sessions, the therapist consciously chose to avoid direct suggestion in favor of grounding the intervention in sensation. For instance, during hypnosis:

Now, I would like you to focus your attention on your right hand [this is the hand she uses to pull], every sensation that the right hand is experiencing at this moment...you find yourself paying close attention to everything your right hand is feeling right now. Becoming keenly aware of every nuance of sensation that is happening in the right hand...how the air feels against the skin of the hand. Tell me, what sensations are you having in your hand right now. That's right, rub your fingers together and feel the surfaces of your skin...the sensation of how one surface feels as it moves across another.... As you become even more clearly aware of the surfaces, you also become mindful of how the hand feels itself...the width and length of its fingers...the way part of the hand is just slightly at a different temperature than another part.... What are you feeling... What are you feeling now?

Kristi describes, not only the sensations in her right hand, but the emotions she is having: sad and anxious. The therapist then says:

Yes that is right, you are doing quite well, your experiencing so much more because you are hypnotized. Now you can be curious about whether there might be an eyelash in your right hand, right on the tip of your fore finger. Let's be curious about how that feels. Let's wait and see. Tell me when you first feel the eyelash on your finger [patient signals the lash is present, and described how it feels].

I know that you do not just pull an eyelash out and then throw it away, but that you pull it out and then, with your right hand, you carefully roll the hair and feel it in a very special way.

Now, let's find out what that really feels like. And what you feel when you roll this lash back and forth between your index finger and your thumb. Go ahead. Go ahead and roll this lash back and forth.

Kristi describes that she can feel the lash, but she does not want to roll it. The therapist encourages her:

Feel the lash on your finger. It is there, and moving around just a little bit. You can feel the air moving it

ever so slightly. Feel its texture against the tip of your finger.

Kristi rubs her thumb and forefinger together and smiles. She describes how good it feels, and how much more relaxed she is becoming.

As you continue to roll the hair over and over again between your fingers, you are becoming more fully aware of your feelings, your emotions ... how do you feel right now [patient answers that she feels wonderfully secure] fine, now allow this wonderful feeling of safety to be center stage right now ... how good it feels ... there is something so familiar, so safe, so wonderful

As the patient reports feeling more and more fully secure and safe:

Now, focus on the safety and goodness. In a little while I will count to 5. Meanwhile stay very, very focused on this wonder safety and goodness. When I reach the count of 5 you will drop your lash without knowing it, and immediately go back to a place and a time when you first felt this wonderful feeling of goodness. So safe, so good. When I reach the count of 5 you will drop the lash and go right back to that place. A time and a place of goodness. You will be touching something, and you will be able to tell me all about it. 1...2...3...4...at the next count you will drop the lash and you will go back to the first time you felt this wonderful safety...5...where are you?

Given her defensive structure and these suggestions, it is not surprising that Kristi reported soothingly embracing her transitional object after an oft-repeated episode of leave-taking by her father during childhood. The regression was compellingly real for Kristi, and the tactile richness of the embrace with her teddy bear was figural. What was once experienced as an exclusively ego-alien visitation of self-mutilating behavior becomes associated with loss, and consolation. Over a period of seven subsequent sessions, Kristi and the therapist worked to consolidate this material, incorporate it into a concise self-hypnosis protocol, and rehearse it in and out of session. At termination, Kristi had a reliable means of self-soothing which she successfully used on a routine basis, and when she became aware that she was stressed.

16.3.2. Insight-oriented therapy

Here we describe how hypnosis can be used adjunctively in expressive therapies with patients functioning within the neurotic spectrum (see row 2 of Table 16.1). These therapies are typically intermediate in length (e.g. 6–18 months), and focus on providing insight and working through of significant arenas of conflict. However, it is assumed that the clinical picture does not involve broad developmental deficits in the patient's capacity for attachment and identity. There is a solid base of clinical and research evidence to support the claim that hypnosis is well suited to the aims and process of uncovering therapies. Because hypnosis involves a topographic regression (Nash, Chapter 8, this volume), when used adjunctively it can promote emotional articulation of conflictual material, enhance access to symbolic processes and encourage de-automatization of ingrained, maladaptive defensive operations. But the flesh and blood of psychoanalytic therapy is the therapeutic relationship itself. Here hypnosis can be used to highlight the patient's transference distortions, thereby making them more immediately available for examination by patient and therapist. These intense transference reactions underlie the enormous clinical potential of hypnosis, but at the same time present special challenges in pacing and dosage of interpretative work.

Hence, insight-oriented therapies are predominantly expressive. Hypnosis is used within the context of traditional transference-mediated psychotherapy to facilitate uncovering, regression, working through and integration. The regressive aspects of hypnosis encourage discharge of disruptive affect and related conflict or trauma. However, these expressive aspects must be alternated with support and containment. Supportive hypnotic strategies (described above Section 16.3.1) strengthen intact defenses, reinforce ego-syntonic adaptive coping strategies, support boundaries and generally summon secondary process mental processes to help the patient smoothly integrate what he has learned about his emotional life. Here the therapist focuses on positive aspects of the working alliance, providing enough containment to support the expressive work, alternated with

suggestions for containment and mastery. Below we illustrate this work with case material.

16.3.2.1. Insight-oriented: case 1, clarifying the transference

Hypnosis may be used to bring into focus important transference reactions in a timely fashion, but with less attendant threat to the working alliance. Among patients who are responsive, hypnosis can facilitate productive attention on the ongoing transferential material in a way that accesses unconscious conflicts and affect, but does not challenge the defenses so acutely. The relative suspension of secondary process in favor of more imagistic modes of experiencing during hypnosis enables the ego to bind intolerable manifestations of the transference to images which are sufficiently vague or disguised that their implications are sufficiently unrecognizable for the time being. Nevertheless, important uncovering work can proceed. Perhaps even more critically in the beginning phases of the therapy, the patient is extended a gentle invitation to reflect on his/her own experience of the therapist in a context which communicates, not pressured confrontation, but earnest curiosity.

During the second intake session with a perfectionist single heterosexual depressed woman in her early 30s, I (M. R. N.) listened without comment as the patient described three upsetting situations, all of them involving a man requiring more 'attention and care' than she can deliver: a teacher, her father and a co-worker. The strained quality of these stories seemed to suggest that they might be references to the transference, i.e. she had experienced me as demanding and critical in our previous session. My invitations to consider whether she might harbor similar feelings about me were met with suspiciously sachrin denials

In a later session, hypnosis was attempted, in part to challenge and highlight her resistance to the awareness that she was having important feelings about me. Accordingly, after an initial induction and series of ideomotor suggestions, the patient was instructed to have a dream about 'hypnosis and me'. 'You will have a dream about me doing hypnosis with you and what it means. This might be directly evident from what

you dream, or you may dream about this quiet indirectly, but you will have a dream about me doing hypnosis with you, and what it means’.

The patient reported that she is in the classroom where she had seen me teach. I am lecturing to her and the other students, but I never ask anyone else questions, only her. Soon she is unable to hear my questions or make sense of what I am saying. But I look angry with her because she does not know the answers. She feels humiliated.

This work with hypnosis proved pivotal. As we explored the meaning of this dream outside of hypnosis, it became evident that her perfectionism is a desperate defense against intrusive fears of being shamed and humiliated by those she loves. When it came to men, the only thing good enough is perfection. This young woman’s emotional life was organized around sacrifice versus defiance. We could now explore this dynamic material as it unfolded in the therapeutic relationship.

16.3.2.2. Insight-oriented: case 2, catharsis and the silent abreaction

Abreaction is not a stand-alone technique as Freud learned very early in his work with patients. However, in certain cases involving trauma, it can prepare the ground for interpretive work by giving the patient a sense of conviction about the reality of a remote event which might otherwise remain vague and unavailable. A hypnotic technique that can assist with this process is the ‘silent abreaction’ as first articulated by Helen Watkins (1980). What follows is a case example of how this technique can be used for insight-oriented work.

A 28-year-old female patient with three children was referred for depression. It became plain that she expected men, including the male therapist, to be controlling and in charge, hopefully in a benign manner. When this wish was frustrated in therapy, she attempted to solicit this response by being seductive. Interpretation of this dynamic was secured without recourse to hypnosis. With the resistance thus illuminated, the patient began to revisit incidents of early sexual abuse (aged 6) by the maternal grandfather. She always remembered these incidents, but rarely thought or spoke of them. These erotic and sometimes violent memories were clear.

Feelings were not. In fact she wrote off the matter as being ‘ugly but over’. Still, she found herself being visited by the memories more often now. About this time, the patient also began to experience unusually intense anger: uncharacteristic irritability at family members, conversion reactions and motor agitation. As connecting the current angry episodes to her seductiveness with me and to her history of trauma proved difficult, the therapist employed a hypnotic technique, silent abreaction, designed to bring emotion into the foreground of her awareness.

During hypnosis the therapist suggested that the patient imagine going back to the bedroom where the attacks took place. No one would be there but her. The door is closed and she would not make a sound...‘not a peep’. It was suggested that she ‘examine the bed very, very carefully, telling me every detail’. She carried this out with her usual precision. The therapist mentioned that soon she would find a very sturdy new oak baseball bat, and as she and the therapist explored her feelings she began quietly, silently, but thoroughly to demolish the bed with the baseball bat. And as she did the tears streamed down her face as she whispered through her clenched teeth how she hated him, his ‘ugly body’, and his ‘sick mind’. With every word, she struck the bed.

There is nothing about insight here. Instead the work of this hour was restricted to elaboration and expression of affect. The patient reported some initial confusion followed by a quite sense of exhaustion—a relief which seemed to persist for several days. What was mutative occurred during sessions subsequent to the hypnosis as the patient discovered words that could meaningfully articulate the enormity of her rage, not just at her grandfather, but at all figures who she construed as maliciously dominating (for quite some time this included the therapist). Tracing and retracing contemporary manifestations of this recurrent interpersonal scenario of being controlled by men eventually revealed her own desperate attempts to achieve mastery over her passive dependent yearnings via seduction.

16.3.2.3. Insight-oriented: case 3, revealing neurotic relational patterns

Following the affect, pursuing its displacements and condensations, and re-tracing its course

across objects remains the most rewarding avenue for elucidation and resolution of core conflictual material. What follows is a case that illustrates how hypnosis can be employed in support of this process.

A 37-year-old married female patient presented with a long-standing untreated depression with recent acute suicidal features. This woman also suffered from chronic pain for which she had undergone several courses of surgery over the past 5 years, with little improvement. The patient was a bright, but emotionally constricted woman who had little capacity to be directly angry with her husband. She over-idealized her husband and strove to be his 'perfect little girl'. During the initial intake session, she reported that the previous evening she had placed a loaded pistol in her mouth: she had played with the idea of pulling the trigger. She was hospitalized for 9 days. While in the hospital the patient was seen daily for psychotherapy. The initial focus of therapy was the relief of her pain, since this was her only conscious reason for wanting to commit suicide. The therapy proceeded quickly in two phases: her conversion of anger to somatic pain; and the emergence of the original interpersonal matrix in which this anger was embedded.

During the third session in the hospital, the patient was hypnotized and found to be highly responsive. Accordingly she was asked to have a dream about 'what your pain means'. She vividly described a beautiful day on a beach in the Caribbean. She was alone, sunning herself on a white-sand beach. The noise of the surf and the gulls was soothing and peaceful. As she visually scanned the scene she glanced at her own body. There she notices that coming out of the right side of her abdomen is 'a white cloth, half in and half out'. When asked to describe this white cloth, she said that it is white cotton; it emerges about 7 or 8 inches from her side, and it is gently waving in the breeze. She was bewildered by this, but certain that the cloth had something to do with her pain. Mindful of the patient's unconscious resentment of her submissive posture in important relationships, and mindful that premature interpretation of the phallic aspects of this imagery might be counter-productive, the therapist queried whether this white cloth might be 'a flag of

surrender'. Stunned for a moment, she wondered aloud whether she could ever stop wearing 'this thing'. For several subsequent sessions which did not employ hypnosis the patient productively considered whether surrender and pain might be connected for her. Interestingly, her pain began to recede as she articulated her husband's oppressive insistence on her having a recent abortion. During a later hypnosis session the 'white cloth' gradually emerged entirely from her abdomen. She could now examine it much more closely. Interestingly, her examination of the 'white flag' was attended by angry fantasies of wanting to strangle her husband with it (now ironically it had become a weapon). While she was entirely pain free for the first time in months, she was left with a raw anger at her husband which was quiet frightening to her. She reported 'blowing up' at her husband for seemingly trivial oversights.

The second phase of this therapy began as the patient was invited to examine this anger more closely—to follow its course to the very source. Hypnosis was used on only one occasion in which the therapist employed the 'affect bridge' (J. G. Watkins, 1971). Here hypnosis was used to magnify and intensify an important emotion (in this case anger). When the patient was experiencing the emotion with vivid intensity, an age regression was quickly suggested: an age regression to an important time when this same intense feeling was in play. This turned out to be an incident she had always remembered. However the response of the patient was a bit unusual for two reasons. First, the age regression settled on a relatively recent, but no less important incident at the age of 19. Second, there was practically no conscious experience of anger as she described the incident. As the patient regressed to age 19, she coolly reported walking down the steps of her parents' home (where she lived at the time she was age 19). She is thinking about a very attractive young man she has met during the summer. A brief romance had developed that summer but he had to leave town for 3 months. He left, but promised he would write. As the patient imagines walking down the stairs of her parents' home to the living room, she is wondering why he has never written. It has been over 2 months and she has not received a single letter. As she somewhat glumly and silently

enters the living room, she notices her mother standing by the fireplace with a sealed letter in her hand, about to pitch it into the flames. The patient realizes that she has caught her mother in the act of destroying what turned out to be the seventh or eighth letter from the young man. Again one particularly noteworthy aspect of the patient's story is that she was not in the least bit consciously aware of being angry at her mother. She numbly submits to her mother's explanation that the boy is 'not really suited for you'. She returns to her room feeling that what her mother did is probably wrong, 'but she really is just trying to look out for me'.

The therapy now traced the demoralizing and humiliating surrenders she had made to the pathogenically intrusive mother: a mother who interpreted even the most innocent manifestation of separation/individuation as literally 'sin'. Of course the patient was remarkably persistent in her attempts to enact this same scenario with the therapist (e.g. 'Is it sinful to feel this way about her?'; 'Isn't it horrible/sick that I have these feelings?'). This patient's will had been crushed by her beloved mother. As she began consciously to experience anger at a previously over-idealized mother, her depression lifted markedly. Just as importantly, a neurotic burden was lifted from her marital relationship. Couples therapy could now begin in earnest.

16.3.3. Intensive long-term therapy with borderline and psychotic patients

While insight-oriented therapies with neurotic spectrum patients emphasize the regressive aspects of hypnosis and its importance for uncovering and abreaction, intensive work with borderline and psychotic spectrum patients emphasizes the integrative potential of hypnosis and its importance for structural maturation and master. Hypnotic technique allows for the direction of a specific experience in external sensory reality to be elaborated, given meaning and internally integrated, facilitating the resolution of unfinished developmental work. The experience of hypnosis involves repeated experience with the boundaries of reality and the self through the unfolding of regression and dissociate processes. Within the context of the

therapeutic alliance, hypnosis can be used to stabilize the demarcations and functions of boundaries and reinforce the patient's sense of efficacy and security in autonomous control. The experience of hypnosis also involves a series of experiences of 'being with the other' with varying degrees of intensity in object relatedness. The interpersonal qualities of the hypnotic experience demonstrate that the interpersonal connections can be tolerable, safe and even gratifying, while providing secure opportunities to intensify or to dilute the degree of interpersonal interaction.

Meaningful psychotherapy with these patients is frequently very difficult because of problems in establishing a consistent and valid therapeutic alliance. These patients resist interpersonal involvement due to fears of merger, rejection or malevolent destruction. Further, attempts at alliance are disrupted by: labile shifts in affect, with the intrusion of primitive aggression; shifts in the experience of self and other due to the absence of an integrated internal representational world; and erratic and transient regressions with increases in autistic involvement and the use of primitive defenses such as splitting, denial and projective identification. The lack of structural integrity is a core aspect of these patients' psychopathology and becomes a crucial focus in any hypnotic intervention.

Experience with a consistent and facilitative environment is a cornerstone of this work. However, consistent experience with the environment is limited by the fragmentation, disorganization, lability and regressive propensity of these patients. Therefore, therapeutic intervention must: establish clear and reliable boundaries; provide a consistent and secure experiential environment with those boundaries; develop a capacity to titrate engagement with the environment at a level tolerable to the patient; establish avenues to represent, process and integrate that experience internally; and contain episodic disengagement and regression without disruption, abandonment or retaliation. The capacity of hypnosis to delineate experience differentially, to modulate the intensity and locus of experiential involvement, and to process this experience in an interactive/interpersonal fashion renders it a useful technical adjunct to the strategic management of these parameters in intensive treatment. The therapeutic relationship

and the therapeutic process then can evolve in a form conducive to structural mutation and psychological maturation.

A number of technical alterations are important in applying hypnosis to patients organized at this primitive level of development. A clear demarcation of the boundaries of hypnosis and specific cues and sensory referents helps to contain the experience of altered consciousness without the undue regression, and to anchor this experience to a dependable external reality. The clarity of these boundaries also serves to stabilize the patient's own ego boundaries of the self. Formal and structured hypnotic procedures, the comparison of experience in and out of hypnosis, 'open-eyed' hypnosis to check episodically the permanence and continuity of external reality, limits on undirected association during trance and specific ideomotor signals to alter trance involvement and to maintain interactive connectedness with the therapist are useful and important technical considerations in structuring hypnosis. The touch of the therapist's hand, focused sensory awareness of the weight of the feet on the floor or the clenching or unclenching of a fist can provide sensory anchors for images.

The 'grounding' of intervention in sensory experience parallels the way in which internal concepts are grounded in sensori-perceptual exploration and experience during childhood, and supports the evolution of a consistent internal organizing structure for experience. As the patient learns to enhance body awareness or to use body experiences to control tension, to recapture a soothing image, to restore a sense of security rooted in the relaxation of hypnosis or to access attention or problem-solving processes, he or she also develops a sense of mastery and a sense of self as master. This emerging sense of self as one with the physical reality of the body, comfortable with awareness of the body and in control of body experience is fundamental to the development of a stable self-concept fueled by a sense of self-efficacy and self-esteem.

Hypnosis provides opportunities to direct specific experiences with and of the external world including the therapist, and to elaborate these as building blocks of the internal self-structure. The relaxation of hypnosis, the soothing and gratifying attention of the therapist and

the calm security of the office provide an experiential referent for the perception of self as comfortable (and comforted), safe (and securable) and gratified (and therefore deserving of gratification). Simultaneously, such experience can be utilized to demonstrate the security and goodness of involvement with the world. Altered attention in hypnosis, muscle tension discharge and motor control during hypnosis can enhance awareness of the integrity of the body (and self as strong) and control over motor and sensory processes (and self as efficacious and/or autonomous). Such experiences can be elaborated with internal symbols and structured fantasies to expand the certainty and integrity of identity and the consistency and safety of others in the eternal world.

Hypnotic images are often useful for these patients in creating a sense of self as a whole, as attractive, or as lovable. Problems with object performance—the continuity of object and self across time and space—can be addressed by images that evoke a single consistency of the self or object representation elaborated or focused across imagined situations. One of the senior author's patients had a favorite yellow scarf that we regularly included in images of self in varying situations and temporal frames. Another focused on a characteristic birthmark to assure himself that he was able to exist unchanged across time. Difficulties with object constancy—the integrity of self and object across situations with changing affective valences—can also be treated with hypnotic imagery and sensorimotor experience. Images of blending and mixing can support the working through of splitting defenses without overwhelming anxiety. Images that emphasize the integration of parts, the uniqueness of parts that remain securely anchored to a whole and fantasies about the ability of relationships to continue despite changes in self and other are all evocative of emerging representational constancy and structural stability. With another patient, the senior author would ask him to imagine that one hand was becoming very, very heavy while the other hand became very, very light, and then to focus these sensations while simultaneously experiencing that both hands were part of his body, that both sensations were a part of his experience of himself, and that he could move

both hands together or apart. We then reversed the sensory experience so that the light hand became heavy and the heavy hand began to feel light. This experience became a sensory focus for his work on the constancy of his identity across varying feeling states and his ability to tolerate and manage opposing feelings simultaneously in anticipation of an emerging capacity for neurotic ambivalence rather than primitive and discontinuous affective lability.

16.3.3.1. Intensive long-term therapy: case 1, psychosis

From the beginning of treatment, the primary focus of therapy is helping the psychotic patient relate to the therapist as someone who can nurture and protect him in a consistent and dependable fashion. In a manner which is felt generally to recapitulate the developmental process of self/other differentiation followed by object introjection and integration, hypnotic visual imagery and fantasy are developed in the following progressive sequence:

1. While maintaining relaxed feelings of comfort and calm, the patient is helped to visualize an image of self involved in some pleasant activity alone. Feelings of relaxation and well-being are suggested intermittently.
 2. The patient is instructed to open his eyes and see the therapist, then close his eyes and return to an image of self. This process is repeated several times with suggestions for relaxation and comfort. This process helps to reassure the patient that the therapist continues to exist when he cannot be seen, and begins to pave the way for the development of evocative object constancy.
 3. The patient is helped to develop visual images of the therapist associated with continued feelings of relaxation and well-being. It is not unusual for patients to experience difficulty in visualizing the therapist. If this is the case, images of the therapist's name written on a blackboard, or his initials, or an object selected from his office desk are substituted. With any feeling of discomfort, the image is discontinued and an experience of calm relaxation is redeveloped. This use of inanimate representations or symbolizations of the therapist is useful in controlling the anxiety associated with
- attaching to a real, whole object so characteristic of schizophrenic patients. Their usefulness as transitional phenomena appears to parallel the developmental occurrence of transitional objects (Winnicott, 1965) and the emergence of similar fantasies in psychoanalysis.
4. The patient is instructed to alternate between developing visual images of the therapist and images of self; then to picture the two together. The proximity of 'togetherness' may be defined by the patient. It may involve being in the same room, passing on a highway in separate cars or viewing each other across a chasm with telescopes. Gradually, the distance in the images is decreased in concordance with the maintenance of calm and comfort.
 5. Next, treatment moves to develop fantasies involving the patient and therapist in parallel activity and then in interaction. Interactional fantasies are developed to emphasize the nurturing, supporting and protecting role of the therapist, and move from concrete to symbolic representations of these functions. The fantasy reflects the level of dependence/independence appropriate to the patient's level of functioning. This internalization of positive visual images of the therapist provides a cognitive-affective pairing which facilitates the introjection of the therapist as a good (gratifying) object and the experience of self in relation as a positive, 'good me'. These images may then be used as cues to induce or deepen the trance, reduce anxiety and increase feelings of positive self-regard. Once the object introject is well established, it may be used as a focus to gain control over hallucinations and delusions by altering the patient's cognitive set, decreasing anxiety and reducing the patient's need for compensatory, autistic self-stimulation through providing a more gratifying yet safe connection with the real world and its consensually validated internal representation.
 6. Controlled externalization of distorted self and object representations is facilitated through helping the patient develop visual representations of voices, threatening delusional figures, the infant self who provoked mother's anger and deprivation, the crazy self who cut her wrist, etc. These images may be managed in fantasy or hypnotic dreams in

one of two ways. Elements which need to be made increasingly ego-dystonic or repressed may be elaborated in terms of their destructive effect on the patient and relegated to 'an old truck', 'stored in the attic' or 'buried for later excavation' via fantasy. Elements which represent aspects of defensive object splitting may be moved towards integration through emphasis on their similarity, alteration of their symbolization in terms of shared significant dynamic issues, and various fantasy representations emphasizing temporal and spatial pairing or revivification of common historical roots for the split images. Often this results in marked abreaction.

7. With increasing stability of ego-functioning, hypnotic fantasy may begin to include other significant objects, and work may move to examine significant interpersonal experiences with an emphasis on integrating both positive and negative images. As dynamic issues emerge, they are examined and worked through external to the trance state.

A vignette from a case illustrating the various stages of this treatment approach may help to clarify its application. John was a 23-year-old white, single male who was seen on the inpatient psychiatric unit of a teaching hospital. This was his second psychiatric admission in 2 years with a diagnosis of paranoid schizophrenia. The patient presented with classical symptoms, including auditory hallucination, religious and persecutory delusions, ideas of reference, progressive withdrawal, and a guarded and suspicious interpersonal stance. The patient agreed to work with the therapist, and asked for hypnosis after learning of its helpfulness from a fellow patient. During the first session, a light trance was induced utilizing progressive relaxation. The following exchange occurred:

Therapist: Now John, as you continue to relax and feel how good it is to control your own muscles and control your own body and be in charge on your own thoughts and feelings, if you wish you can imagine seeing an image of yourself in your mind's eye. Just imagine that you can see your reflection in a mirror.

Patient: I can't, it's too dark.

Therapist: Well, let's just turn on a light.

Patient: The light of the world is Jesus, not you.

Therapist: Jesus wouldn't want you to hide your light under a bushel basket, so just let it shine for yourself and see how warm and calm it can feel, like sunshine on a summer day.

Patient: It is warm.

Therapist: Good. That warmth is a good feeling that can help you become more and more relaxed. Now perhaps you can find that mirror.

Patient: I see it, but I can't look.

Therapist: You're afraid of what you'll see?

Patient: (nods yes).

Therapist: If you look closer, you'll notice that you can see your face there smiling, looking calm and relaxed and happy. It feels good to see yourself up close...just your face with two eyes and a nose...

Patient: I can't look!

Therapist: Can you tell me what's happening?

Patient: My face is melting. It's running and oozing and isn't one face but like vomit that has lots of cut-up faces in it.

Therapist: Then let's just turn that mirror upside down and bring your face back together again. Everything just returning to it's right place. Together ... together ... there, now.

Patient: It worked!

Therapist: Let's just let it rest there, together now. It's all one face; your face. It's together like you can move your hands together if you wish. There. Just grasp one hand with the other. Feel the touch, the pressure, the strength, the warmth. You can move them together, grip them tightly, or move them apart.

Whatever you want. Each hand is still a hand, separate, But they can come together; work together, just like you and me. We're together and that can feel safe and warm and secure. You're still you, and I'm still me. But we can work together....

Patient: I can see you. [He opens his eyes.] And you're still here.

Therapist: That's right. I'm here when you have your eyes shut, too. So just relax and remember that you can control togetherness. Can you see your face?

Patient: Yes.

Therapist: That's good. Sometimes your face may want to vomit, to vomit up all the poisons that are inside. But it's still your face and that won't scare me away. And maybe it won't scare you when we're together.

[In the third session with this patient, efforts are focused on helping him visualize himself together with the therapist.]

Patient: You aren't there.

Therapist: Sure I am. Do you want to check?

Patient: [Opens eyes, smiles, then closes them.]

Therapist: Can you see us together now?

Patient: [He giggles.] Yeh. You're on a mountain in California, and I'm not there. I'm on the top of a mountain in New York. It's windy up here.

Therapist: But the winds can gradually slow down. And we can see each other.

Patient: Through telescopes.

Therapist: You look far away but you look like you belong there for awhile. Maybe we could send messages across the distance that separates us to keep in touch.

Patient: Probably smoke signals. I'll say, 'I'm hungry'.

Therapist: Then I'll just send you a meal now and then, and we both can stay strong and safe. But someday we may build a bridge and find that we can be together and neither of us will be destroyed.

Patient: Like the Golden Gate Bridge? San Francisco is for queers.

Therapist: Coming together has many scary feelings doesn't it? John. We won't build that bridge until you're ready.

Patient: I'm sending another signal. It says, puff, puff, 'puffection' takes time.

Therapist: I can give you time too. We'll wait together, but apart.

Patient: You're the doctor.

16.3.3.2. Intensive long-term therapy: case 2, borderline personality disorder

Just as the integrity and stability of the psychotic patient's self-structure emerge from secure and

gratifying experiences of the other and the world during hypnosis, similar technical maneuvers can help borderline patients to internalize representations of permanence and constancy. Hypnotically elaborated images can move from partial representation to whole pictures (part objects to whole objects) to support structural cohesion. Experiences with being 'together but apart' can be developed through hypnotic interactions involving alternating sharing/no sharing of experience such as dreams retold or kept private during hypnosis, sensory alterations that involve hearing the therapist's voice as coming from near or far away, or alternately feeling and being anesthetic to pressure on the back of a hand. Such experiences reinforce the patient's ability to maintain a secure sense of self in interaction with others and to control the privacy of internal experience and the regulation of stimulus barriers requisite for social involvement. Hypnotic fantasy may also be utilized to help the patient imagine an expanding world of parallel and interactive object involvement and to profit from the gratification and rehearsal functions such fantasy can serve. A brief clinical vignette from a hypnosis session with a borderline patient illustrates this approach.

Sophia was a 27-year-old single woman who presented with classic borderline features of impaired impulse control, emotional lability, dissociative symptoms and identity diffusion. In one therapy, session utilizing hypnosis, the therapist gave the following suggestion:

While remaining relaxed and quiet, focus your attention on the feeling in your feet. Notice if they feel warm ... or heavy ... or tingly. Compare the sensations in your right foot to your left. Good. Now picture an image of your feet in your mind's eye; each foot firmly connected to the rest of you. Can you imagine them there? [Patient nods.] Good. Now I want you to move your attention back and forth from the sensations in your feet to the image in your mind while focusing on how my voice sounds just the same and my presence feels just as near regardless of the focus of your attention. Some aspects of your experience will change while others stay the same, and that can feel comforting, soothing and secured. Just focus heavy ... picture your feet ... warm ... picture the right and the left ... tingly ... a feeling in your body and an image in your mind can

be experienced together just as you and I continue to be together in this room.

Here the therapist is working to integrate body wholeness, body sensory awareness and identity integrity by helping the patient to practice the experience of connecting and integrating transitions in sensation, perception and cognitive representation within the holding context of the therapeutic alliance and the continuity of the therapist's empathic and observational presence. Such work provides an experiential anchor for maturation to object and self constancy and the ability to evoke this sense of integrity in the face on anxiety, producing shifts in sensation, affects and self-awareness.

This perspective emphasizes the interactive phenomenological matrix of hypnotherapy and the enhanced ego-receptivity of trance involvement as a crucible for recapitulation developmental work through directed trance experience that is internalized and integrated via the transitional functions of the hypnotherapist and the structuralizing representations of the therapist as a transitional object. By forging developmentally focused experiential bridges, such hypnotherapeutic interventions help to build internal structures which potentiate internal stability and psychic integrity and which help our patients to grow in structural maturity.

16.4. Conclusion

The integration of hypnosis into psychoanalytically informed treatment offers opportunities for the creative facilitation of the therapeutic process. For patients in the normal to neurotic spectrum, hypnosis can be used supportively to strengthen already intact defenses, in service of managing pain (acute and chronic), anxiety, stress and some somatic symptoms. These therapies are of relatively brief duration, with an emphasis on patients using self-hypnosis strategies to achieve the goals they have set for themselves. For patients in the neurotic spectrum who suffer from delimited and/or encapsulated symptoms, the regressive aspects of hypnosis can be used to facilitate emotional expression, broaden insight and permit discharge of disruptive affect

and related conflict or trauma. These therapies are typically of intermediate length. Finally, hypnosis can be useful in work with borderline and psychotic spectrum patients who lack a consistent capacity to engage and to modulate emotional processes via verbal and introspective activity alone. Here hypnosis can help to direct experience, to contain and to modulate the process, and to facilitate its internal representation and integration in a fairly direct fashion not typically available in waking, verbal psychotherapy. This aspect of hypnosis is especially helpful in treating patients with structural pathology who otherwise demonstrate significant problems in engaging and tolerating the process central to the work of psychotherapy.

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CHAPTER 17

Reclaiming the cognitive unconscious: integrating hypnotic methods and cognitive-behavioral therapy

Joseph Barber

17.1. Unrealistic expectations

Hypnosis is not a type of therapy, like psychoanalysis or behavior therapy. Instead, it is a procedure that can be used to facilitate therapy.

American Psychological Association (1993, p. 7)

A review of the titles in the clinical hypnosis literature over the past 75 years suggests a charming but curiously naïve optimism about the efficacy of hypnotic intervention. Compared with other psychological methods, clinicians and patients alike often have expected hypnotic treatment to be magical in its effect. These methods have been believed to be curative—and quickly—of virtually all psychological ills—and a variety of medical ailments, as well. Psychological symptoms might include amnesia,¹ drug abuse, marital discord, heightened libido and lowered libido. The wide range of medical syndromes includes chronic pain, speech disorders, fibromyalgia, chronic fatigue syndrome, gastrointestinal distress, hypertension,

obesity, skin disorders, alcohol or drug addiction and a range of endocrine disorders. With the advent of the Internet, the capacity to spread such expectations has grown suddenly and enormously. Persuaded by the claims of advertisements and popular literature, the general public has developed expectations that hypnosis can achieve almost anything. We should not be surprised, then, that the public view of hypnosis is so ambivalent, ranging from credulousness to ridicule.

Deepening the problem further, this unusual set of expectations is reflected in the hypnotic training of health practitioners. When, for example, a dentist or a gynecologist undertakes hypnotic training relevant to dentistry or

¹ The distinction between documented traumatic memory loss and the undocumented report of amnesia for traumatic events is an important one. The perils of hypnotic treatment for the latter are described elsewhere (Barber, 1998b)

gynecology, the specific admonition is given that the practitioner should confine hypnotic treatment to his or her specialty. This caution recognizes that, because these practitioners are being trained in the use of a psychological method, they are likely to be tempted to treat problems beyond their training and, in particular, they are more likely to treat problems that are essentially psychological in nature.² Is there any other clinical method, taught to dentists, physicians and psychotherapists, alike, which tends to promote such inappropriate use?

A further influence on the unrealistic expectation of hypnotic effect is the use of hypnotic methods by those who are otherwise not clinically trained. A review of Yellow Page listings reveals that the number of ‘certified hypnotherapists’ exceeds the number of clinically trained professionals.³ Is there another clinical method that does not require basic clinical training for its legitimate practice? This is a curious state of affairs.

However, even the hypnotic training of otherwise well-trained clinicians may not be sufficiently different from that of ‘certified hypnotherapists’. Observing the clinical training of hypnotic methods for professionals, one might reasonably conclude that these methods somehow allow us to dispense with our usual clinical considerations, most notably the necessity for thorough evaluation prior to intervention. It is as if the magical thinking sometimes evoked by hypnotic suggestion in the minds of patients has a similar effect in the minds of practitioners—even when their names begin with ‘Doctor’.

Clinicians who do not practice hypnotic methods are also vulnerable to the magical belief in the efficacy of such treatment. This is often revealed when they make an inappropriate referral for hypnotic treatment. It would be

highly unlikely that such patients would be referred for cognitive-behavioral therapy (CBT)—or any other psychological intervention—for the range of problems listed earlier, and certainly not with the concomitant expectation of rapid success. Not to put too fine a point on it, but we suffer from highly unrealistic expectations of hypnotic methods.

Let us assume that the use of these methods depends upon the same psychological principles that apply to any other intervention. We should employ the same clinical assessment procedures we would use prior to undertaking nonhypnotic clinical interventions. In addition, we must expand the assessment process to include evaluation of the specific appropriateness of hypnotic methods.

For example, if, upon evaluation, I determine that the patient’s aversion to riding in an airliner is the result of a concatenation of events that conditioned the patient to feel anxious about flying, then I think that a relatively conservative, simple CBT approach is likely to be effective. If I judge that hypnotic suggestion will facilitate a heightened, vivid focus on the treatment, then I will add this component to the intervention.

If, however, I judge that the patient’s aversion to riding in an airliner is the result of the trauma he experienced as a pre-adolescent when his father died in the crash of an airliner (a trauma he does not want to visit upon his own son), then I think it improbable that CBT will be effective in reducing this patient’s aversion to flying. Upon further exploration with the patient, he is able to say, ‘Unless there is a guarantee that the plane won’t crash, I’d rather not take the chance. Period’. When I suggest that his aversion seems the natural reaction of a caring father, the patient expresses relief. He now accepts that avoiding airliners is a healthy (if sometimes inconvenient) choice, rather than a neurotic limitation.

In a strictly narrow discussion of using hypnotic methods with CBT, there is little to say beyond elaborating the ways that hypnotic methods can increase the patient’s focus, highlighting the vividness of the treatment, and thereby substantially increase the effectiveness of the intervention. However, I think that treatment effectiveness will be further enhanced if

² A typical example is the case of a surgeon who uses ‘hypnotherapy’ to treat a case of hysterical muteness, though not effectively, evidently unaware of more appropriate treatment (BBC, 1981).

³ The training of a ‘certified hypnotherapist’ (sometimes called a lay hypnotist) ordinarily consists of a set of weekend workshops on the use of hypnotic techniques—without any other training in the principles or techniques of medicine, dentistry or psychotherapy.

the clinician's conceptual grasp is broader. Accordingly, we will explore the larger context in which hypnotic methods are used in psychotherapy. Like hypnotic techniques, CBT is not conducted in a psychological vacuum. It is the human interaction, however extraneous it may be to the clinician's intent while using CBT, which may either facilitate or thwart the otherwise appropriate application of hypnotic methods.

17.2. Integrating hypnosis into psychotherapy

17.2.1. Initial clinical assessment

We will assume that a usual assessment when undertaking psychotherapeutic treatment includes a diagnostic interview, MMPI (Minnesota Multiphasic Personality Inventory), discussion of the treatment plan and then an initial treatment trial. If the treatment will be hypnotic in nature, there are additional considerations which ought to be made. I will want to be confident, for instance, that the patient can tolerate the sometimes unusual cognitive and affective qualities, as well as the heightened interpersonal qualities that tend to accompany the hypnotic experience.

A patient whose psychological boundaries are confused or vague, or who expects that interpersonal relationships will be threatening or harmful, is more likely to experience difficulties (Barber, 1998a) as a consequence of this treatment. A patient whose sense of reality is tenuous is more likely to have difficulty tolerating the experience of an altered state. However, a patient who is vulnerable to dissociative episodes is likely to find the hypnotic experience a familiar and, probably, nonthreatening one. For such a patient, one of the initial goals of hypnotic treatment might include identification and understanding of the dissociative experience, which can support the patient's conscious control of the phenomenon. Exerting such control can reduce the automatic activation of dissociation as a defense but allow it as an aid to hypnotic treatment.

17.2.2. Hypnotic assessment

It is well documented that readiness to respond to hypnotic methods is variable. If the clinical goals do not depend upon the patient's ability to

dissociate fully, this readiness is unlikely to be important. Nonetheless, it can be useful to the clinician to have a sense of the patient's readiness to respond. Many clinicians utilize one of the well-known measures of hypnotic responsiveness, perhaps the most widely used being Morgan and J. Hilgard's Stanford Hypnotic Clinical Scales (SHCS; Morgan and Hilgard, 1975, 1979). However, other clinicians may be concerned about the potential for the patient's experience of failure to respond to the scale and the consequent limiting effect on the therapeutic relationship.⁴ For these clinicians, the Tellegen Absorption Scale (TAS; Tellegen and Atkinson, 1974; Tellegen, 1982) offers a useful and comparatively nonintrusive alternative to the responsiveness scales. Though the correlation between the TAS and the Stanford Scales is small (0.20–0.40), unlike the more quantifiable scales of hypnotic responsiveness, administration of the TAS can readily be done within the context of preparation for hypnotic induction, using ordinary, respectful, non-threatening language. Moreover, the patient's responses to the TAS items provide the attentive clinician with more than a mere score; they create a meaningful impression of the patient's comfort with the experience of imaginative absorption. Josephine Hilgard (1970) first identified the relationship between absorption and hypnotic responsiveness. The special relationship between an individual's ability to become absorbed in imagination and that individual's readiness to respond to hypnotic suggestion has been well investigated (Quall and Sheehan, 1979; Hilgard and Hilgard, 1994; Glisky *et al.*, 1995).

Imaginative involvements may be in reading, in dramatic viewing or acting, in music listening or performing, or in some forms of adventure. The person who becomes involved temporarily sets ordinary reality aside to become totally absorbed in the imaginative experience; he finds this absorption refreshing and wholly satisfying. ... Those who habitually had such experiences proved to be among the most hypnotizable, while those who could report none of them were among the least hypnotizable (Hilgard and Hilgard, 1994, p. 11).

⁴ It is important to remember, when considering the use of any of the hypnotic responsiveness scales that, at best, the administration of the scale can yield only a probabilistic assessment of the patient's ability to respond (Hilgard, 1994, p. 68).

17.2.3. Introducing hypnotic methods to the patient

How should the patient be informed about the use of hypnotic methods? Since we are operating under the assumption that psychological principles (and principles of good treatment) are unchanged by the introduction of hypnotic methods, we do not want to encourage the patient's probably misguided expectations about hypnosis. I find it useful to describe the treatment in terms that describe the process. For instance, the patient might be told, 'Your imagination will be helpful to this phase of treatment'. Or, 'Mental rehearsal is usually more effective if you can become deeply absorbed in the process'. Or, 'We can best proceed if you will close your eyes, relaxing and allowing the external world to recede while we focus on your inner experience'. In each example, the patient is being informed about the experience or the process that will be undertaken; there is no intent (nor necessity) to mislead. However, by not saying, 'Now I will hypnotize you', most people's misunderstanding about hypnosis will not be activated.

17.2.4. Crafting the induction as part of the therapy

The history of hypnosis has left in its wake a troublesome taxonomy, in which terms are often more metaphoric than descriptive, more confusing than clarifying. 'Induction' is the unfortunate term⁵ given to denote the process whereby the clinician helps the patient begin the process of making cognitive and affective shifts, from ordinary waking attention to functioning from a more narrow, internally oriented focus. It is within this latter frame that perception and memory may be modified, and which facilitates greater access to internal experience. In this respect, the induction is a process of altering consciousness (Kihlstrom and Hoyt, 1990; Kihlstrom *et al.*, 1992; Kihlstrom and Eich, 1994). The hypnotic induction is the means whereby the clinician moves, either abruptly or gradually, from usual conversation with the

patient to a monologue that contains suggestions intended to facilitate the turning inward of the patient's attention, and then narrowing the range of the patient's attention toward what Braid (1960) once called 'mono-ideism' to indicate the single-mindedness that can be characteristic of the hypnotic experience. This initial stage of the hypnotic method constitutes an invitation to the patient to 'lay aside the cares of the day', as Hilgard would say, and focus attention on the thoughts and feelings and images evoked by the words of the clinician. However, although the induction is important for helping the patient to establish the dissociative qualities necessary to some hypnotic phenomena, we may have paid too much attention to this part of treatment at the expense of the actual clinical plan. More about this later.

17.3. What hypnotic methods can achieve

Suggestions are not the unique province of hypnotic treatment. Effective psychotherapists who do not employ hypnotic methods are familiar with the usefulness of nonhypnotic suggestions. Why should a clinician take the time and effort to induce a hypnotic experience? In what circumstances are hypnotic suggestions more effective than nonhypnotic suggestions? What are features of the hypnotic experience that can inform us about realistic expectations we might have for clinical hypnotic methods? Attention to these questions will facilitate our effective use of these methods.

The psychological quality that is the hallmark of the hypnotic experience is dissociation (Orne, 1959, 1966; Bowers, 1976; Frankel 1976; Hilgard 1986; Hilgard and Hilgard, 1993). Although dissociation is essential for some clinical applications, perhaps most notably in the treatment of pain, it is not essential for most psychological interventions. In the course of psychotherapy, this dissociative quality may be facilitative, but, of course, it is not necessary for effective treatment. This is not to say that the hypnotic process is not useful. Applied deftly, even if the hypnotic induction may not necessarily result in dissociation, it may convey to the patient that this is a special circumstance of

⁵ I say, 'unfortunate,' because 'induction' supports the misguided belief that the clinician is 'doing something to the patient', rather than, for instance, inviting the patient to participate in a meaningful imaginal process.

deep focus and greater emotional contact with the clinician. More, the induction can be used to convey that this is a safe and secure context in which to become more aware of deep internal experience and profound psychological content.

In this context, then, let us review the three categories for which hypnotic methods have been shown to be effective when integrated with CBT.

17.3.1. Symptom amelioration

Following the theoretical foundations of CBT, we assume that the hypnotic amelioration of symptoms is primarily conditioning in nature, that the hypnotic experience serves to accelerate the conditioning process, and hence we are guided by principles of learning. Although single-treatment reduction of a symptom may occasionally occur, as does single-trial conditioning, such a result is not likely, and we need not expect such a miracle to result from our interventions, no matter how cunningly crafted they may be. As with almost all conditioning, repetition is necessary, although the integration of hypnotic methods may serve to abbreviate the usual number of repetitions and, consequently, may reduce the length of treatment.

While hypnotic methods may be used directly and expressly to suggest alteration of symptoms, they may also be used to support and amplify the effects of more conventional CBT. In each of the following examples, familiar CBT methods may be made more effective by the patient's hypnotic experience of comfort, security, greater receptivity and greater access to imagery.

17.3.1.1 Facilitating identification of intrusive thoughts

If the patient is initially unable to identify the thoughts which precede, say, feelings of anxiety, the addition of the hypnotic experience may be sufficient to focus the patient's attention and clarify thinking. In this fashion, the hypnotic intervention can highlight triggering events, while simultaneously providing the patient with a better means to manage emotional reactions better.

17.3.1.2. Reframing

While reframing may be helpful in a nonhypnotic context, the additional alteration of the patient's consciousness, with the increased sense

of comfort and receptivity that usually characterize the hypnotic process, may amplify the effectiveness of such reframing. That is, when a patient has the hypnotically enhanced qualities of a fresh or expanded understanding of a problem, the patient also benefits from the emotionally supported experience of positively modifying perspective.

17.3.1.3. Using post-hypnotic suggestion to facilitate thought stopping

'Whenever you notice [the target thought], you will immediately and automatically find yourself saying, "Stop!" and your attention will immediately and automatically turn to [the preferred thought]'. The effectiveness of thought stopping can be enhanced by the contribution of post-hypnotic suggestion—the automatic quality of the desired behavior.

17.3.1.4. Using post-hypnotic suggestion to facilitate behavioral change

Case example: compulsion: Erika—overeating and regretting it

Trigger: stress and anxiety.

Treatment plan: identify triggers. Post-hypnotic suggestions are offered to enhance control over behavior. These include: 'Whenever you notice that impulse to snack, stop what you're doing, take a deep, satisfying breath, hold it for a moment, and then, as you let it all the way out, these feelings of comfort and satisfied well-being will automatically come washing over you. You will then listen to music that pleases you [or initiate one of two other stress-reducing behaviors the patient has identified]'.
Case example: phobia: Erik—fear of flying

Case example: phobia: Erik—fear of flying

Trigger: thinking about flying.

Treatment plan: conventional CBT exposure is made to the hierarchy of anxiety stimuli within the hypnotic context, plus post-hypnotic suggestions for managing anxiety when it emerges. These suggestions include: 'Whenever the thought of flying occurs to you, take a deep breath, hold it for a moment, and then, as you let it all the way out, notice how naturally these feelings of comfort and well-being come washing over you...'

17.3.2. Exploration or problem solving

Clinical example: Erika (same patient as above): compulsion: overeating

Prior to developing the CBT plan, Erika discussed her experience of overeating. Initially, she identified her problem as ‘habitual overeating’ and she had no awareness of what stimulated the habit nor of what role the habit might play in her life. During the conversation, suggestions were made for her to close her eyes and become increasingly aware of her inner experience. Since she readily responded, hypnotic suggestions were used to heighten her awareness of her eating habit. ‘As you sit quietly, you’ll begin to notice the feeling you’ve described. You’ll begin to want to snack. Let me know when that happens.’

After a moment, Erika smiles and says, ‘I feel embarrassed, but I think I want to eat a cookie.’

That’s right, you want to eat a cookie. And, as you let that feeling continue to be with you, tell me what you see in your imagination.

I’m in my kitchen.

You’re in your kitchen. (Note: the echoing of Erika’s statements is intended to heighten her awareness. This process must be done with finesse, of course, lest it seem robotic and disingenuous.)

Mhm. I’ve just gotten home from work. [She sighs] God, I feel exhausted.

You feel exhausted. And what else are you aware of right now?

Erika is quiet for a moment and looks puzzled. ‘I think this reminds me of coming home from school when I was a kid. My mom would always be there, in the kitchen’. She laughs. ‘I have the feeling that she was always baking, but I know that can’t be true.’

You have the feeling that she was always baking.

Mhm.

And what else do you notice?

She always sat me down with a glass of milk and two cookies. And the same for my sister.

She always sat you down with a glass of milk and two cookies. As you remember this, what do you feel?

Erika smiles. ‘I feel sort of ... sort of bitter-sweet, you know? It’s nice to remember my mom in this way, but...’

It’s nice to remember your mom in this way, but... ?

She sighs. ‘I realize, now, that, when I get home from work, I wish my mom were here to give me milk and cookies’. She laughs. ‘It’s nice, but sort of sad, because ... well, she’s not here, is she?’

It’s sort of sad, because she’s not here.

Within a short time, the conversation led to Erika’s growing awareness that, at least partly, her daily snacking was a self-soothing attempt to recreate the comfort her mother afforded her. We were then free to begin attending to the lack of comfort in her life and to explore more productive, satisfying and healthy ways to obtain the comfort she needed.

17.3.3. Development of the therapeutic relationship

Shor (1962) identified archaic involvement as an essential feature of the hypnotic experience. Archaic involvement refers to the rapidly developed sense of closeness the patient feels to the clinician who employs hypnotic methods and, by extension, it refers to the heightened sense of power and import the patient attributes to that clinician. For Shor, this reflected a psychological revivification of feelings and the re-enactment of the relationship the patient had with early care-givers.

The clinical significance of this archaic involvement merits special attention. Any alert practitioner of hypnotic methods has observed the sometimes sudden alteration in the quality of the therapeutic relationship. This phenomenon has been explored elsewhere (Bowers, 1976, p. 113; Diamond, 1984; Frederick, 1994; Barber, 1998a). This quality of the hypnotic experience lends itself to utilization in the clinical circumstance, of course, but, even if the clinician does not have this purpose in mind, the phenomenon will occur. That is, even if one is strictly focused upon the utilization of hypnotic methods as an adjunct to CBT, the patient is likely to experience archaic involvement. Thus, the hypnotic experience tends to cause the patient to feel attended to, comforted by and emotionally closer to the clinician.

Because the experience of being hypnotized tends to promote trusting, affectionate feelings toward the clinician and tends to incline the patient toward compliance with the clinician’s

suggestions, experienced clinicians use this feature to facilitate the patient's sense of comfort and security in the clinical situation. It may be that this experience promotes a lowering of defenses toward the clinician, and is central to the sometimes rapid effects often engendered by hypnotic treatment.

The process of building the relationship is more complex, of course, than the process of providing CBT. The process of building the relationship is also more complex and more lengthy than reflected in the clinical examples described above. Most clinicians are familiar, though, with the salutary effects of a patient's developing trust and openness to the treatment.

17.4. Troubleshooting

Treatment does not always go well. Sometimes the treatment, however well validated, is ineffective. Or sometimes the treatment may result in reduction of symptoms, but only transitorily. Though it is rare, occasionally a patient may experience untoward complications resulting from the hypnotic experience. We do well to be prepared for these eventualities, however uncommon they may be.

17.4.1. When the intervention is not effective

Case example: anxiety: Bart, a pilot afraid to fly

Trigger: intrusive thoughts about a near-accident.

Treatment plan: Anxiety hierarchy in the context of hypnosis.

Bart is a private pilot who was frightened by a potentially catastrophic 'near-miss' of a collision with another aircraft. The resulting anxiety has kept him from flying.

He responded readily to a hierarchy of imagined stressors, beginning with imagining the airport, which he could do with no anxiety, through being at the controls of the airplane, which, initially, he could not tolerate. Through hypnotic suggestions to reduce anxiety, and with two repetitions, Bart was able to experience the full hierarchy, including the highest level, piloting the airplane, with no unpleasant affect.

Within a few days, he went to the airport to fly. He was able to approach the airplane,

performed the pre-flight inspection, executed the checklist and started the engine. However, he felt increased anxiety and felt he should not fly.

The treatment was repeated within a week, with results similar to the previous occasion. Bart said he felt confident, now, that he would be able to fly.

A return to the airport the next day resulted in a similar aborted attempt to fly. At our next appointment, when we discussed the treatment ineffectiveness, I suggested it meant that perhaps I was missing the meaning of the flying anxiety or its role in his life. He disagreed, and concluded, 'Maybe I'm safer here on the ground'. He discontinued treatment.⁶

Two years later, Bart sought treatment again, saying, 'You were probably right about missing something. I hadn't told you about my marital troubles, and that's what I'd like your help with now'. As Bart freed himself from a very unhappy marriage, he reported that his general level of anxiety decreased and he had begun flying again, though with an instructor.

The lesson this case taught me is to be wary of being too narrowly focused. If I had had broader understanding of Bart's circumstance, I might have been better able to integrate that knowledge with his anxiety about flying. For example, if I had understood the stress he felt from his unhappy home life, I might have been able to look beyond the apparent root of his flying anxiety (the near-accident), as I was subsequently able to do. (It eventuated, as you may have guessed, that Bart's unhappy home life generated an undercurrent of apprehension and anxiety about which he remained only distantly aware. One might say that this anxiety cathected to his sense of the danger of flying. Since the source of his anxiety—his conflicted marriage—was not given adequate attention, his anxiety was not reduced and, so, his fear of flying was not affected.)

17.4.2. When there are complications

Case example: Genevieve, painful cysts

Treatment plan: establish hypnotic analgesia to reduce awareness of pain.

⁶ I must admit that this reduced my own anxiety. What if, after successfully reducing Bart's anxiety about flying, he is involved in an aircraft accident?

Genevieve is a 36-year-old oral surgeon who suffered from painful mammary cysts. Her physician had no effective solution to offer, so Genevieve has sought hypnotic treatment. Contrary to her expectations, she is unusually responsive to hypnotic suggestion. At the conclusion of the first hypnotic experience, she expresses surprise that 40 min seem to have passed in no more than ‘four or five minutes’. She is very surprised to notice that she has no pain. We make a follow-up appointment.

That night, Genevieve reaches me through my answering service. She is obviously distressed as she recounts the events following our appointment.

I walked down the stairs and then, when I reached the sidewalk, I didn’t remember where I was or where I should go next. I wasn’t really troubled by this, but I knew that it was very unusual. I *always* know where I am and where I’m going!

She went on to describe becoming oriented sufficiently to remember that she was supposed to return to her office. She then walked three blocks to the location of an office where she had practiced prior to moving to her current location more than a year ago. She was more agitated when she realized her error. She then hurried back toward my office where she had parked her car. ‘Then I just sat in my car for ... a couple of minutes, I think ... just sort of “blissed out”, I guess you’d say’. She then seemed to ‘wake up’ and the rest of her day was uneventful. She was calling now, however, because she was increasingly worried about her experience. ‘Am I going crazy, or something?’ After reassuring her, we agreed to meet as we had previously arranged.

At our appointment, 2 days later, she reported that she had experienced no pain since the previous treatment. ‘I should be happy about that, I guess, but I feel too worried about what’s happening to me’.

I describe my belief that she is far more deeply responsive to hypnotic suggestion than she (or I) had imagined and that the residual confusion she experienced was a result of the depth of her altered state. She accepted this explanation. However, she declined further treatment, saying, ‘I can’t believe you cured my pain so quickly, but I’m glad, anyway’.

Genevieve’s experience was significant to me, alerting me to the possibility that a patient may not be fully oriented just because she and I expect her to be. Subsequently, I have give more time and attention to assuring that a patient is fully oriented before leaving my office.

I have previously presented a more thorough discussion of cases that involve unintended complications (Barber, 1998a).

The mindfulness that we wish for our patients is required of us to manage such unintended consequences of our treatment.

17.5. Summary

The effectiveness of psychotherapeutic treatment, in general, and CBT, specifically, may be accelerated and otherwise enhanced by the thoughtful integration of hypnotic methods. The experience of hypnosis may serve to heighten the patient’s focus and concentrate attention on the therapeutic experience. Additionally, the relatively rapid development of the therapeutic relationship that results from the hypnotic experience supports the effectiveness of the treatment. While clearly advantageous, such gains are accompanied by potential difficulties. Clinicians who employ hypnotic methods are obligated to be especially alert to complications and other unintended consequences of the hypnotic experience. Even if a symptom-based emphasis (rather than a relationally rich psychotherapeutic alliance) is the expressed goal of treatment, clinicians who employ hypnotic techniques must be psychologically prepared for the kinds of emotional experiences and attachments that may develop.

Be realistic about expected outcomes. Be a clinician first. Remember to integrate hypnotic methods with sound psychological theory and practice. Utilize effective assessment and be prepared for whatever surprises your patient may bring to you. For you can be sure they will.

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CHAPTER 18

An Ericksonian approach to clinical hypnosis

Stephen Lankton

18.1. Introduction

Milton H. Erickson, M.D. (1901–1980) is largely considered an architect of innovations in clinical hypnosis and in psychotherapy; some have labeled his contributions as being parallel in scope to those of Freud. However, where Freud was a major contributor to the theory of personality structure, Erickson's contributions involved methods and techniques of intervention and change. One can measure his contributions in many ways. He advanced clinical hypnosis, family therapy and the general approach to problem solving in all therapies. He was said to have hypnotized more than 30,000 people during the course of his career (Lankton and Lankton, 1983). He wrote the entries on hypnosis for three encyclopedias, including the *Britannica* from 1954 to 1973, the *Americana* for 7 years, and *Colliers Encyclopedia* from 1952 to 1962 (Lankton, 1979). He published more than 300 scientific papers, has had more than 100 books written about him, and there are 124 institutes attempting to promote his approach worldwide.

His creative and pioneering contributions to therapy inspired works by Bateson (1972, 1979), Haley (1973, 1985*a,b*), Watzlawick (1976), Bandler *et al.* (1976), Fisch (1990), Fisch *et al.* (1982), Ritterman (1983), Rosen (1982), Erickson and Rossi (1979) Rossi (1980*a,b,c,d*, 1981),

Lankton (2004), Lankton and Lankton (1983, 1986), Zeig (1980, 1982, 1985*a,b*), Zeig and Lankton (1988) and others. Erickson himself, however, never offered a formal theoretical formulation of his work. There are no entries entitled 'theory' in the indexes of Erickson's collected writings (Erickson, 1980*a,b,c,d,e,f,g*), nor in Erickson's collected lectures and seminars (Rossi *et al.*, 1983; Rossi and Ryan, 1985), nor in any book written by him (Cooper and Erickson, 1954; Erickson *et al.*, 1961, 1976; Erickson and Rossi, 1979, 1981). This is primarily due to Erickson's desire to avoid structural theories for working with individuals and families in favor of formulations about the process of change itself.

A great deal of confusion surrounds the work of Milton Erickson, and a great deal of diversity marks the true legacy of his career. It is difficult to characterize Dr Erickson's approach to therapy, and his work is too novel and varied to outline the approach which he most commonly used. For example, there are a wide range of case examples given by Erickson wherein the applied technique was never repeated and never empirically tested. He provides details of successful work with patients whose symptoms or diagnoses range from pain, post-traumatic stress, general anxiety disorders, depression, childhood sexual abuse, phobias, borderline personality and dissociative disorders, catatonia, active psychosis, and beyond (Haley, 1973, 1985*a,b*;

Rossi, 1980*a,b,c,d*). Looking just at the interventions he used, we again see a wide diversity; a few of these fall under the category of intentionally producing ‘shock’ (via an unexpected delivery), which caused a moment of pause or confusion in which clients had an inability to mobilize a response that, for them, would correctly articulate their reaction; in that moment more therapeutic progress was made.

On the other hand, there are interventions which Erickson used repeatedly and which can be employed thoughtfully by modern therapists to enhance their repertoire of interventions. These would include the use of therapeutic stories such as Erickson’s repeated use of the February man technique delivered by a lengthy story within hypnosis (Erickson and Rossi, 1989). In addition, several other unique interventions arose as hallmarks of Erickson’s work. These include, for example, his use of cognitive reframing, varieties of indirect suggestion to induce hypnosis or retrieve trance phenomena, confusion techniques, structured amnesia and the use of goal-directed rehearsals in hypnosis, and visual multiple-dissociation technique, to name just a few.

In addition to this dizzying array of work that students must synthesize, many myths and false assumptions have appeared both by word of mouth and in print about so-called ‘Ericksonian hypnosis’. In an attempt to clear the confusion, I will begin naming and dispelling some of these false assumptions.

18.2. Four common myths

18.2.1. Myth #1: there is some special sort of hypnosis called ‘Ericksonian hypnosis’

After carefully studying this topic for 30 years I am confident that the hypnosis achieved by Erickson is not different from that done by other therapists. However, the term ‘Ericksonian hypnosis’ became a convenient way of referring to an *approach to change* that is *uniquely* Erickson’s. The proper phrase ought to be an ‘Ericksonian approach to change and hypnosis’.

That said, it might be important to speculate on the definition of hypnosis that I am embracing.

I consider hypnosis to be a heightened state of internal concentration. In such a state, the subject may spontaneously demonstrate all the classical trance phenomena to varying degrees, depending on variables such as duration of the episode, previous learning experiences and the stimuli provided to them. Erickson described hypnotic trance ‘as a special psychological state which effects a similar break in the patient’s conscious and habitual associations so that creative learning can take place’ (Erickson and Rossi, 1979, p. 6). And at other times Erickson stated, ‘hypnosis [is] a modality of communication of ideas, understandings, and useful unrealized self-knowledge contained in what is popularly called the unconscious’ (Erickson, 1980*d*, p. 74). In other words, it is therapeutically communicating with the client who is experiencing that heightened state of internal concentration which facilitates a reduction of the normal conscious framework and its imposed limits. The unique manner in which Erickson communicated and facilitated change is our focus of interest, but not the hypnotic trance *per se*.

18.2.2. Myth #2: Erickson’s work was all about using indirect suggestion

There has been some controversy over the years between those who insist that Erickson used direct suggestion and those who claim that he relied on indirect suggestion. The controversy is easily resolved when we look at the evolution of his work over time. In a 1957 (Haley, 1967) transcript of Erickson conducting an induction, we hear the direct suggestions and the redundant use of the word ‘sleep’ as found in the following quotes, ‘As you go deeper and deeper asleep...’ (p. 53), ‘Now I want you to *go deeper and deeper asleep*’ (p. 54), and ‘I want you to go deeper and deeper asleep’ (p. 54), and so on. However, by 1976, Erickson believed indirect suggestion to be a ‘significant factor’ in his work (Erickson *et al.*, 1976, p. 452). Furthermore, by 1981, Erickson clearly stated that he ‘offers’ ideas and suggestions (Erickson and Rossi, 1981, p. 1) and explicitly added, ‘I don’t like this matter of telling a patient *I want you to get tired and sleepy*’ [italics mine]—a complete reversal from his position regarding direct suggestion two decades earlier (Erickson and Rossi, 1981, p. 4).

With regard to his use of indirect approaches, there is clear evidence that Erickson's practice evolved to a point in the late 1970s where he had all but abandoned his earlier techniques of redundancy and authoritarianism during induction. In the course of his career, Erickson demonstrated the use of both direct and indirect suggestion during hypnosis. He stated, 'indirect suggestion tends to bypass conscious criticism and because of this *can be more effective than direct suggestion*' [italics mine] (Erickson and Rossi, 1980b, p. 455). His later writing indicated that by the end of his career he preferred using indirection so as to reduce compliance and to have a stimulating effect on the client's active mental processes. He explains that the effectiveness of therapy is the result of this inner activity stimulated by indirection when he writes:

Direct suggestion is based primarily, if unwittingly, upon the assumption that whatever develops in hypnosis derives from the suggestions given. It implies that the therapist has the miraculous power of effecting therapeutic changes in the patient, and disregards the fact that therapy results from an inner resynthesis of the patient's behavior achieved by the patient himself. It is true that direct suggestion can effect an alteration in the patient's behavior and result in a symptomatic cure, at least temporarily. However, such a 'cure' is simply a response to the suggestion and does not entail that reassociation and reorganization of ideas, understandings and memories so essential for an actual cure. It is this experience of reassociating and reorganizing his own experiential life that eventuates in a cure, not the manifestation of responsive behavior which can, at best, satisfy only the observer (Erickson and Rossi, 1979, p. 9).

18.2.3. Myth #3: the Ericksonian approach does not require preparation—just trust your unconscious to do the right thing

This false assumption amounts to having a subject enter trance and then telling them whichever story happens to come to mind. This is a dangerous false assumption that has been promoted in many communication training workshops for nonprofessionals. I am not sure of the degree to which it is an opinion held by

any trained professionals. However, there is an appeal in this belief for inexperienced clinicians because it dictates that formal education, professional training and supervision, restraint and ethical wisdom are unnecessary for the therapist. As a consequence, we might expect clinicians with less experience to embrace such an idea.

While this is not the proper context in which to expound on the subject of counter-transference, it is simply sufficient to illustrate that this idea does not arise from Erickson's work. While Erickson was keen on having clients trust themselves and elevate their own sense of capability, to trust their unconscious experiences, he did not mean for one to conduct therapy in the absence of professionalism, conscious knowledge or unexamined conduct. He was well known for taking great effort in preparation of his interventions. There is an often told tale of his laborious reworking of a 20-page induction until it became reduced to a one and a half-page induction after many drafts. This process of careful preparation was repeated for many recorded cases (Erickson and Rossi, 1989).

However, while Erickson formulated treatment plans, made ongoing assessments and took well-crafted action as much as possible, his intent to allow and utilize the client's unique responses would leave moments where he had to act without fully understanding the situation. Some confusion may arise from comments Erickson has made regarding these moments. 'I know that in the situation of dealing with patients I often wish I knew exactly what I was doing and why, instead of feeling, as I know I did with both patients, that I was acting blindly and intuitively to elicit an as yet undetermined response with which, whatever it was, I would deal' (Erickson, 1966, p. 62). While this seems to contradict earlier remarks, it is merely a careful introspective analysis of the moment to moment, here and now contact Erickson made with clients. This did not define his overall approach. He sometimes referred to the myth of the Procrustean Bed to illustrate that a therapist should not cut off the client's experiences to make them fit into the therapist's favorite theoretical stance. While he had an overall map of where therapy was going, he was able to take detours along the way that would accommodate unique client responses.

18.2.4. Myth #4: anyone who claims to work with an Ericksonian approach is an Ericksonian

There has been no standard set to credential or in any way certify a clinician as ‘Ericksonian’. One would assume the proper organization to undertake such a task would be the Milton H. Erickson Foundation, Inc., and its 120 plus institutes established around the world. However, the American Society of Clinical Hypnosis was established by Erickson in 1957 and it provides a competency certification for clinicians who use hypnosis. Mrs Elizabeth Erickson remains steadfast in her belief that there should not be a competing organization, collection of dues and provision of certification. This wish is regarded as a valid position by the Milton H. Erickson Foundation, Inc., and such standards and credentialing will not occur. As a result, there are no controls regulating an individual’s claims of working with an Ericksonian approach.

There is a related problem. Just what is an Ericksonian approach? This chapter will outline my standards for the principle to which a therapist should adhere and the defining basic footprint of an Ericksonian approach. Readers should keep in mind that other notable authors may place emphasis elsewhere and offer an alternative schema; however, none has done so to date.

18.3. Fundamental principles of Erickson’s approach

Understanding or describing Dr Erickson’s work has two major difficulties. One is that Dr Erickson himself avoided using theoretical trappings to create concepts for a human being or his or her problems. He often found it unnecessary to describe his approach with other than folksy or common understandings. However, his approach has been looked at carefully by a number of his students who are skillful practitioners and psycho-theoreticians.

In combining the ideas purported by these individuals with Dr Erickson’s work, we can draw a framework of Ericksonian approaches to therapy. It should be mentioned that the clinical work of Dr Erickson done in waking state psychotherapy bears the same fingerprint as that

done under hypnosis. As previously mentioned, there is no such thing as ‘Ericksonian hypnotherapy’, but rather there is an Ericksonian *approach* to hypnosis. We can, therefore, examine the larger body of his clinical and psychotherapy work, and from this derive a richer pool of examples from which to sketch what constitutes the basic footprint of the Ericksonian approach in hypnosis as well as in waking state.

18.3.1. Speaking the client’s language

One of the most compelling features about Dr Erickson’s approach was his ability to speak to anyone. He referred to this as ‘speaking the client’s experiential language’. This meant that it was possible for Erickson to speak comfortably with a wide range of clients—from physicians and physicists to farmers, unemployed individuals, musicians, Native Americans, etc. One might question how Dr Erickson’s approach of speaking the client’s experiential language differed from that of the Rogerian approach of empathic and active listening. The answer lies in the adaptation, by Dr Erickson, of the client’s language and gestures. That is to say that there was an acculturation that quickly occurred where Dr Erickson’s approach allowed him rapidly to obtain and reflect the culture of the client who was speaking. This varies from the Rogerian approach in which the therapist merely tries actually to reflect or accelerate the emotional content for the client to indicate that the therapist understands. This has often been referred to as pacing, and sometimes ‘pacing and leading’. Leading in therapy, as done by the therapist, is the ability to blend with the client’s experience and offer ideas that change the direction of the conversation.

18.3.2. Taking a nonpathological approach

Erickson was keen on reducing the degree of stigma attached to a client by the mental health or medical community. He commented that an unsightly gap between a woman’s teeth was an extraordinary way to direct a flow of water that she could ‘spit’ at a man who followed her to the water cooler at work; he convinced a girl with

severe acne that it was like ginger cookies fell on her face; he got an autistic young man to take dance lessons and then self-evaluate that he was better off than the wallflowers at the barn dance; he convinced a young girl obsessed with her large feet that her feet were too small, etc. In none of these cases did he need to resort to clinical labels or a focus on the client that emphasized deficiency. Instead, he emphasized a nonpathological approach that continually identified personal and interpersonal strengths that empowered his clients.

18.3.3. Conceptualization of symptoms: positive and individualistic

From his earliest years as a psychiatrist up to at least 1954, Erickson took a traditional analytic view of neurosis and various symptoms. He said the development of neurotic symptoms 'constitutes behavior of a defensive, protective character' (Erickson, 1980c, p. 149). By the mid-1960s his view had become much more interactional. Perhaps this was a result of his collaboration with Jay Haley, Gregory Bateson, John Weakland and the Palo Alto Communication Project. In any case Erickson writes, in 1966, 'Mental disease is the breaking down of communication between people' (Erickson, 1980d, p. 75). However, by the end of his career, he had moved even further from the analytic and the communications/systems theory of disease. He stated that symptoms are 'forms of communication' and 'cues of developmental problems that are in the process of becoming conscious' (Erickson and Rossi, 1979, p. 143). In summary, his evolution of thought concerning the nature of problems became less oriented to a pathological explanation until, in the end, symptoms could be seen as communication signals of desired directions of growth. Erickson took such signals to be a request for change and even unconscious contracts for therapeutic engagement.

Erickson attempted to take a unique approach with each client. He mentioned this unusual approach in nearly every training session I attended in the mid- to late 1970s. His personal contact and nonpathological view of clients led to a strong resource- or strength-oriented approach to all problems. He did not espouse

a personality theory and did not, therefore, posit the existence of a negative or harmful personality part (such as Thanatos principle, Superego, negative Adaptive Child Ego State, bad-mother, shadow, etc.). It appeared that for Erickson, all behaviors, thoughts, feelings, perceptions, and so on were resources that could be used in a manner that was positive for the client. This view gave rise to the logic behind reframing and utilization.

18.3.4. A strategic approach

Erickson was fully engaged in the sessions to the extent that he orchestrated the direction of therapy whenever possible. This active approach, wherein the hypnotist introduces the next issue, experience or idea, is the key factor in a strategic approach. While Erickson's speaking the client's language seems Rogerian in principle, his strategic approach is clearly a departure from anything Rogerian. There is a fine line between controlling a session and being strategic in such a fashion that, at the same time the client is contributing to the therapeutic movement, the therapist is introducing control into the material. Yet this type of blending is exactly what Erickson attempted and achieved in his best cases.

18.3.5. Solution oriented

Erickson was interested in moving clients from their current problem state to one of health and adjustment as soon as possible. He inquired selectively about a client's past and placed the emphasis of therapy on the goals and future direction of outcomes that might be achieved. He did not take elaborate psychosocial histories, but derived an understanding of a client's limiting past from the limitations he or she demonstrated in accessing resources in the present. Since the goal was to help clients have the resources they needed in the contexts in which they needed them, an analysis of past limitations was only counter-productive. I speculate that this approach was refreshing to most clients and reduced the possible defensiveness and stigma attached to seeking professional help. The 'bottom line' is that therapy is about retrieving experiences. It is not about insight, or changing reinforcers, nor is it about cognition and imagery, *per se*. It is about any or all of these aspects, providing the central concern is to reorganize the

client's experiences. 'It is this experience of reassociating and reorganizing his own experiential life that eventuates in a cure...' (Erickson, 1980e, p. 38).

18.3.6. System oriented

Erickson did not fall victim to the notion that a person could be treated in isolation. When he saw a child or one member of a couple, he knew he was helping to create change in the entire system. Granted, his way of viewing interventions made his actions or interventions seem similar for individuals, couples or families. For example, a paradoxical intervention could be requested for an individual's behavior in trance, a couple's behavior in couple's therapy or an entire family's behavior in family therapy. Indeed, the interventions he typically used have even been expanded into organizational and corporate change (Lankton and Lankton, 1997; Lankton, 1998).

18.3.7. The use of ambiguity

Perhaps the most intriguing aspects about Dr Erickson's work were his use of various forms of ambiguity in his interventions. He has written about the use of ambiguity as forms of indirect suggestion (Erickson and Rossi, 1980b), varieties of double binds (Erickson and Rossi, 1980a), confusion techniques (Erickson, 1980f) and the use of complex stories or therapeutic metaphors (Erickson, 1980b). These will be discussed in greater detail below. Furthermore, his use of humor and interactive questioning during sessions was still another way in which he introduced ambiguity. If the client arrives at an idea by his or her own active thinking, sorting through otherwise ambiguous content, then the client will not resist it. It was the client's discovery and not compliance that evoked the new thought, idea, goal or experience. Therein lies the true value of using a controlled elaboration of ambiguity in trance.

18.3.8. Action versus insight

In addition to these verbal methods, Dr Erickson also used a number of extramural activities that have been called ordeal assignments, ambiguous function assignments, and task and symbolic assignments. In addition, Erickson felt that the mental effort made by the client in hypnosis was

the basic minimum work that got them active. He would ask for a very small change as a precursor to a larger change. Once a client was in action, greater action could continue. Erickson thought that insight was a cognitive understanding that did not lead to action. Rather, he thought that action would be followed by insight (and not the other way around). Erickson writes, 'In other words, hypnotic psychotherapy is a learning process for the patient, a procedure of reeducation. Effective results in hypnotic psychotherapy, or hypnotherapy, derive only from the patient's activities. The therapist merely stimulates the patient into activity, often not knowing what that activity may be, and then he guides the patient and exercises clinical judgment in determining the amount of work to be done to achieve the desired results' Erickson and Rossi, 1979, p. 9).

18.3.9. Utilization

The principle of utilization, sometimes called utilization technique, is a pivotal aspect of Erickson's work. Utilization refers to using, rather than challenging or inhibiting, what the client presents. If a client is adamant that he or must continue to pace the floor and cannot sit in a chair, then hypnosis is done asking the man to continue pacing. In one case, Erickson asked if a client would be 'willing to cooperate with me by continuing to pace the floor, even as you are doing now?' (Erickson, 1980g, p. 181). Each time the man passed the chair, Erickson would comment how nice it might be to sit in it and relax but, since he could not, to keep pacing. Eventually, he was permitted to sit for increasingly longer periods and then continue pacing. Finally, of course, he remained in the chair and in hypnosis. Summarizing this process, Erickson wrote, 'These techniques are in essence no more than a simple reversal of the usual procedure of inducing hypnosis. Ordinarily trance induction is based upon securing from the patients some form of initial acceptance and cooperation with the operator. In Techniques of Utilization the usual procedure is reversed to an initial acceptance of the patients' presenting behaviors and a ready cooperation by the operator however seemingly adverse the presenting behaviors may appear to be in the clinical situation' (Erickson, 1980g, p. 178).

18.3.10. Close observation

Erickson's students were often surprised at the degree of observational skill displayed by him in training classes and while they witnessed his interactions with clients. These tales have included his keen eye for a client's arm movement, calluses on a client's hand when they shook hands, and other reported unique behaviors that revealed telltale aspects that helped build a diagnosis or assessment. The following is a rare report of the degree of concentration Erickson would bring to a session.

Upon the arrival of my patient I immediately became intensely absorbed in the task confronting me ... Now and then I became aware that I had been so attentive to my patient that I had forgotten where I was, but I would comfortably and instantly reorient myself...

To begin, my first procedure was to make a visual and auditory survey of the interview situation. I wanted to know what my patient could see and hear and how a shift of his gaze or a change of his position would change the object content of his visual field. I was also interested in the various sounds, probable, possible, and inclusive of street noises, that could intrude upon the situation. I inquired about the age, height, weight, and sex of my patient, and I tested various possible seating arrangements to check relative physical comfort, the possibilities of adequate recording, and the predominant content of the patient's general field of vision (Erickson, 1966, pp. 62–63).

These reports are indicative of Erickson's attempt to truly understand the client's experiential world and blend with it. In his folksy way

he would urge therapists to 'put one foot in the client's world and keep one foot in (their) own' (Erickson, personal communication, August 18, 1975). I address the importance of this position in the next section that deals with the components that will define the basic 'footprint' of Erickson's work.

18.4. The basic footprint

Identifying the modern Ericksonian approach to change can be accomplished by looking for the signs of what I call the basic footprint of Erickson's approach to change. It identifies the approach that Erickson taught and that was reflected in the cases detailed in his collected works (Rossi, 1980*a,b,c,d*). Many have suggested that clinical hypnosis typifies his approach. Others believe that techniques such as metaphor, paradoxical intention and indirect suggestion are the crucial signs (Zeig, 1985*a,b*). But techniques are not the essence of Erickson's work. His is instead a theory of change, and a process of contact with clients that embodies the unique aspects of his approach.

The basic footprint is a model of change that *represents* and *identifies* Erickson's method for change. It is a general umbrella under which we should be able to place any step of change or intervention. Encounters that follow the basic footprint create change, and any therapy that steps through these stages reflects his approach and echoes Dr Erickson's legacy. A brief description of the basic footprint may be helpful. The steps are: matching, blending, utilizing, introducing ambiguity (disrupting stasis), reframing and co-creating outcomes (see Table 18.1).

Table 18.1 The basic footprint

| Stage | Summary statement about the general goal for each stage |
|-------------------------------|--|
| Matching | Understanding client's experience, increasing rapport |
| Blending | Reducing resistance to new ideas |
| Utilizing | Allowing client to extend energy of conflict and exhaust it |
| Introducing ambiguity | Unbalancing, creating a search for 'ground', stimulating client's involvement |
| Reframing | Increasing cognitive or perceptual options or changing the meaning first discovered |
| Co-creating outcomes or twist | Including unique client needs and resources; allowing it to end with the client's unique slant |

Since each area of the basic footprint track is represented by a single word or phrase for convenience, some degree of greater explanation is offered here to provide a better grasp of what occurs and what sorts of interventions, activities, strategies, tactics, etc. are encompassed within each step. Rather than a list, these phases might best be considered as a wheel. It is the entire gestalt of that wheel that, once set in motion, facilitates unique change.

18.4.1. Matching

The goal for matching is to *understand the client's situation and begin to build rapport*, and to experience the world from the client's perspective.

- ◆ Becoming complementary *or* symmetrical, depending upon the situation.
- ◆ Responding, if possible, to all messages sent by clients (verbal and nonverbal).
- ◆ Responding in same system in which system message was sent when feasible.
- ◆ Packaging communication in the unique manner each client uses.
- ◆ Speaking the client's experiential language.
- ◆ Beginning to see, feel, hear and experience the world as clients do.

'There should be a constant minimization of the role of the hypnotist and a constant enlargement of the subject's role' (Erickson, 1967, p. 18). Typical interventions or activities include careful observation, speaking the client's language, entering into the client's world, verbal and nonverbal interpersonal matching behavior, responding to the client in the manner the client expressed him or herself, responding to all channels of communication used by the client, accurately reading 'between the lines' and contextualizing to the same degree the client does.

18.4.2. Blending

The goal is to maximize the client's ability to *express, free of tension, and to introduce ideas to the client free of resistance*.

- ◆ Reducing resistance.
- ◆ Minimizing interference by the therapist.
- ◆ Resonating with the client system.
- ◆ Keeping pace with the dynamic speed and energy.

- ◆ Blurring the boundary or reducing the difference between self and the other person,
- ◆ Removing the line between following and leading clients,
- ◆ Introducing change only at the client's speed,

Often matching and blending have been lumped together as if they were one and the same. The important difference is that an ongoing adjustment to the dynamic motion of the client is not the same as matching communication channels or seeing the world from the client's perspective. The goal of matching is to experience the client's perspective on the world—the goal of blending is to blur the line between therapist and client and to reduce resistance. Matching and blending need to remain separate aspects to emphasize (and ensure) the importance of the continued use of both.

Typical interventions or activities include accepting what clients present as they present it, extramural contracts for increasing trust, using silence, allowing clients to move first and emit fantasy, thought, words and behavior as they emerge.

18.4.3. Utilizing

Using or exhausting clients' efforts, energy and direction.

- ◆ Accepting, enjoying and not resisting the other person's offering.
- ◆ Using client energy with gentle guidance.
- ◆ Continuing client behavior and requesting more of it.
- ◆ Introducing minimum guidance or control in the direction or expression.
- ◆ Allowing clients to extend the use of ineffectual problem-solving efforts.
- ◆ Allowing clients to extend any energy of conflict until they exhaust it.

Typical interventions or activities include the 'classical' use of clients' presented behaviors, extending clients' energy in the manner they wish to extend it, bringing clients' energy and behavior into the service of therapy, using latent experiential potentials and behavior, reducing the effort of the therapist, encouraging clients to continue certain thoughts or behaviors with directed goals, or helping clients tap latent

potentials that have shown some sign of existence (such as talents, or feelings, curiosity, etc.).

18.4.4. Elaborating ambiguity or specificity

Elaborating ambiguity or specificity helps facilitate clients' *searching for experience*.

- ◆ Facilitating search for understanding or new behavior.
- ◆ Unbalancing, creating a search for 'ground'.
- ◆ Personalizing a learning by making sense of it.
- ◆ Seeking a different, or greater experience to their problem solving.
- ◆ Introducing material that is ambiguous but which is apparently meaningful.
- ◆ Requesting more specificity so clients seeking meaning try to find a foot-hold or balance in reference experience.

Techniques include using metaphors and stories, using anecdote for understanding and experiencing retrieval, using verbal confusion, formulating and using indirect suggestion, unbalancing the client system with ambiguous function assignments, and using detailed confrontational and specifying questions that help clients search for their own unique meaning and grounding.

18.4.5. Reframing or relabeling

Reframing or relabeling assists with *sculpting cognitive and experiential understanding*.

- ◆ Using freshly discovered footing or 'sense' of balance.
- ◆ Changing the meaning or 'size' of discovered ideas and experience.
- ◆ Magnifying or diminishing understandings, explanations, reports of history, experimental material, etc., to suit clients' desired and contracted outcomes.
- ◆ Making understandings and experience more or less important, more or less inclusive, 'bigger', 'smaller', 'softer', 'harder', etc.

Techniques include carefully choosing each label and explanation, using techniques of reframing which include a global use of the term reframing as in 'life reframing', conceiving and formulating what is reframed content from the client, reframing experience, etc.

18.4.6. Co-creating outcomes

Being sensitive to the desires, limitations and skills of clients as used by therapists to help determine maximum *achievement implementing therapeutic outcomes*.

- ◆ Including the client's unique needs and skills.
- ◆ Implementing understanding of all the labeled and 'reframed' resources that have occurred in therapy.
- ◆ Helping clients take credit for achievements.
- ◆ Knowing when to let clients 'go it' alone.
- ◆ 'Backward framing' the meaning and accomplishments of the therapy.
- ◆ Handling termination and follow-up decisions and issues.

Techniques include initial contracting with clients, changing contracts in the course of therapy, allowing clients' a unique 'take' on performance or insight about their accomplishments, learning from and being influenced by the client, compromising goals and understandings, post-hypnotic suggestion, emanated imagery, self-image thinking, setting expectations, etc.

There are some complications in this model as mentioned; some interventions operate across several phases simultaneously. Also, therapists should continue to conduct the activities of the preliminary phases as they advance through the others. Finally, any phase can be omitted, depending on various factors of the case. However, when too many are omitted, one can no longer identify the overall approach as something that is exclusively or uniquely Erickson's basic footprint for change.

Some of Erickson's techniques seem to cover more than one area of the basic footprint at once. Techniques such as storytelling may be seen at times as fulfilling almost every part of the basic footprint. Similarly, reframing may at times be seen as involving at least three aspects of the basic footprint: matching part of a client's understanding; introducing a view that is temporarily disrupting; and finally achieving its end as a different understanding or label. How is this sort of overlap to be addressed?

Occasionally, it appears that these steps proceed in a sequential fashion, and at other times it appears that they proceed simultaneously throughout the change process and to some

degree with each technique. Personally, I think they always proceed throughout the entire change process independently of the technique being used. However, some aspects tend to be more noticeable in the early stages of engagement and contracting, and others become more obvious near the end of treatment; hence, the apparent sequential aspect of the stages or steps.

For the sake of teaching any particular technique, it is fine to acknowledge this rich aspect of certain interventions and yet emphasize one relevant angle of a technique's capability. For instance, in a section for matching, therapeutic metaphors can be taught as a way to match, or in a section emphasizing ambiguity, it can be taught as a contribution stimulating new understandings and options.

Similarly, there is a point to be made that some of Erickson's cases seem to emphasize three or four of the steps, but not all of them—indeed, in some cases maybe fewer still. (Erickson's case of the parents hoping to talk a daughter into giving a child up for adoption, for instance, seems to only emphasize reframing.)

In these truncated cases we will not see sufficient signs actually to identify it as Erickson's unique approach, his fingerprint, or, as I am calling it, his basic footprint. But, in the cases where all or nearly all of these stages occur (whether done by Erickson or others), we can recognize his unique approach and credit Erickson.

Certain therapists have explored Erickson's contribution from the standpoint of an almost exclusive use of one or another intervention. For instance, some therapists almost exclusively employ the use of paradoxical intervention to create change, while others may have relied almost entirely on the use of skill building homework assignments.

The success of such mere techniques (which will be listed below in detail) is a testimony to their power, but by themselves do not really 'mark' the approach that uniquely identifies Erickson's contribution to problem solving and change. In fact, it is somewhat of a detriment when less knowledgeable therapists try a technique, fail and then incorrectly proclaim that they 'tried the Erickson approach and it doesn't work'. For that reason, my theme is an attempt to paint Erickson's approach to change with the broadest brush strokes.

In considering the aspects of the basic footprint in the context of research, a main issue is that of research related to treatment outcomes. It may appear to be a paradox that research in treatment outcomes asks the question: is this set of interventions likely to create the requested improvement? That is, a success in predictability means that the interaction has, in some way, caused or forced the desired outcome. Considered in this manner, not many therapists would be proud to say there is predictably or hence 'manipulative' and 'controlling' aspects to their approach. If we can answer affirmatively that we know our approach to change will eliminate a problem, then we must conclude that therapy is ultimately very controlling and manipulative instead of being interactive in a mutually respectful or client-centered manner.

If we examine the steps of an Ericksonian approach we can say that 'matching' or 'speaking the clients' language' is not designed to create the therapy change—it is not designed to create the outcome. Nor is 'blending' a step to create the outcome. These are designed to maximize contact, understanding, rapport, lower resistance, etc. 'Utilization' is not designed to create a changed outcome either. It is intended to use the client's energy or exhaust client energy, and from a habitual and unproductive problem-solving approach.

In the same way, 'destabilizing' and introducing the various types of 'ambiguity' in therapy (confusion, metaphor, indirect suggestion, antidote, etc.) are not designed to create an outcome in and of themselves. But as part of the interpersonal process, they create a context in which clients search for meaning. The same is true for 'reframing' and 'relabeling' as they are not designed to solve the problem. They are designed to help clients sculpt and change the meanings and experiences they discover and know in the most useful and therapeutic manner toward reaching a goal.

In other words, research for therapy outcomes may need to be rethought in light of the steps of the basic footprint. Strategic and tactical therapy attempts to maximize an interpersonal relationship by increasing rapport, reducing resistance, disrupting ineffectual problem-solving efforts, changing the interpretation of experience and arriving at a suitable implementation of goals. Research needs to be done to measure

the use of interventions to *achieve the goals at each step*, on the one hand, and the *effectiveness of sequencing these steps* for efficient problem solving, on the other hand. Of course, there are more research issues that we may have helped clarify by marking out the basic footprint for change.

18.5. Ericksonian approach to retrieving experiences in trance

The most difficult and confusing aspect of Erickson's work is his use of indirection. Several works have published a more comprehensive overview of Erickson's interventions (Lankton and Lankton, 1983, 1986, 1989; Lankton, 2004). This section is not a comprehensive overview of the techniques used by Erickson but is dedicated to developing a deeper understanding of the structure of interventions such as metaphor, indirect suggestion and therapeutic binds in hypnosis.

18.5.1. The use of metaphor as indirect intervention

In 1944, Erickson reluctantly published 'The method employed to formulate a complex story for the induction of the experimental neurosis' (Erickson, 1980*b*). His understanding at that point was that a complex story that paralleled a client's problem could actually heighten the client's discomfort and bring the neurosis closer to the surface. Within a decade, in 1954, Erickson was using many 'fabricated case histories' of fleeting symptomatology (Erickson, 1980*c*, p. 152). Still, almost two decades later in 1973, we see that Erickson provided several examples of case stories for making a therapeutic point (Haley, 1973), and by 1979 Erickson and Rossi actually used the heading of 'metaphor' as a class of interventions (Erickson and Rossi, 1979, p. 49). Again, this movement corresponds to his movement from direct and authoritarian therapy to indirect and permissive therapy.

There are two major categories of metaphor: those which are parallel to the client's problem and those which are parallel to the anticipated goal. Stories which are parallel to the client's current state or problem are far easier to construct and were the first type of metaphors

noticed in the process of modeling the therapeutic work of experts such as Milton Erickson (Gordon, 1978; Lankton, 1980).

The basic idea of the metaphoric stories that are parallel to the problem can be summarized in the understanding of the term 'isomorphism'. Metaphors that are isomorphic have the body of their content in a one-to-one correspondence with the experience of the client. A simple way of understanding this is that for every major player and situation in the client's problem, and for every major relationship and activity in the client's problem that connects these players and situations, a corresponding part is created in the story told to the client. Again, the degree of distance or vagueness between the elements in the metaphor and the elements in the client's life will regulate the degree of ambiguity that is introduced.

For example, consider the following variation of isomorphic metaphor that matches the problem. Here the husband seeks affection from a wife who ignores him unless blaming him for a fault. The pattern then unfolds as the husband withdraws into depression and the wife becomes angry with him. Table 18.2 lists the situation's components as related by the client, and the two columns show the elements of a story that can be told with varying degrees of ambiguity.

It should be obvious that despite the similar isomorphic relationship between parts of the story and the problem, the more ambiguous references may not be an apparent match to the listener for some time (if at all). The solution to the dilemma is not shown in Table 18.2, and contains only the match to the problem. However, the sketching of a part (or all) of the solution would be the next step for the therapist.

The therapeutic value of an isomorphic metaphor exists in two places. The first is that it outlines the context or heightens the client's awareness for the problem situation in which the solution will be fitted, just as Erickson demonstrated in his original article. Second, isomorphic metaphors need to have resolution that provides some metaphoric solution. It is in this second aspect of isomorphic metaphors that beginning therapists may encounter difficulty. There are a few major ways for isomorphic metaphors to be terminated so that they provide a therapeutic conclusion for the problem they

Table 18.2 Varying degrees of ambiguity

| Situation | Less ambiguous | More ambiguous |
|----------------------|-----------------------|----------------------|
| husband | lovebird | electric drill |
| (husband) asks | chirps | (drill) freezes up |
| needs affection | needs touching | needs oil |
| wife | girl | mechanic |
| (wife) ignores | (girl) locks up | throws down |
| (wife) blames faults | (girl) shouts at bird | worries it will burn |
| (wife) defensive | (girl) recalls messes | brags of skill |
| (husband) withdraws | (bird) chews cage | (drill) overheats |
| (husband) depression | (bird) gets ill | (drill) emits smoke |
| (wife) angry | (girl) sells bird | throws it out |

have highlighted. The most elegant manner is that which involves the continued and often creative behavior of the protagonist through whose behavior a solution is modeled. A second, less practical method is for the therapist to introduce into the story the direct instructions that represent words spoken to the protagonist.

This second option fails to meet the criteria of retrieving experiences for a client, and often fails to meet the ambiguity element that prevents resistance in the client. However, it is very practical for clear guidelines, instructions or directives to be delivered to a client in a fashion which reduces confrontation. The third and least elegant method to create a goal in an isomorphic metaphor is to introduce a break in the normal flow of the protagonist's behavior due to some unexpected element, such as the protagonist going to therapy, having a dream or having some sudden sort of epiphany. While this device within a story will allow the speaker to jump to a solution set, it does so at the expense of the logical flow of the metaphoric content, although it still provides an opportunity for experiences to be retrieved which will help alter perception, behavior, emotion or attitude.

The second major category of metaphor is a story constructed to become parallel to the goal rather than parallel to the problem (Lankton and Lankton, 1989). It is essential that a basic protocol be followed for specific goals of cognition, emotion and behavior, and that experiences be

so ordered that the metaphor retrieves a specific goal for the listener. This movement can be maximized to facilitate, if not ensure, that the listener's experience will be one of cognitive alteration, emotional alteration or behavioral sensitizing. In order to illustrate this, the three self-explanatory protocols for emotion, attitude and behavior metaphors will be listed.

18.5.1.1. Affect and emotion protocol

1. Establish a relationship between the protagonist and a person, place or thing which involves emotion or affect (e.g. tenderness, anxiety, mastery, confusion, love, longing, etc.).
2. Detail *movement* in the relationship (e.g. moving with, moving toward, moving away, orbiting, etc.).
3. Focus on some of the physiological changes that coincide with the protagonist's emotion (be sure to overlap with the client's facial behavior).

18.5.1.2. Attitude change protocol

1. Describe a protagonist's behavior or perception so it exemplifies the maladaptive attitude. Bias this belief to appear positive or desirable.
2. Describe another protagonist's behavior or perception so it exemplifies the *adaptive* attitude (the goal). Bias this belief to appear negative or undesirable.

3. Reveal the *unexpected* outcome achieved by both protagonists which resulted from the beliefs they held and their related actions. Be sure the payoff received by the second protagonist is of value to the client.

18.5.1.3. Behavior change protocol

1. Illustrate the protagonist's observable behavior similar to the desired behavior to be acquired by the client. There is no need to mention motives. List about six specific observable behaviors.
2. Detail the protagonist's internal attention or nonobservable behavior which shows the protagonist to be congruent with his or her observable behavior.
3. Change the setting within the story so as to provide an opportunity for repeating all the behavioral descriptions several (three) times.

18.5.2. The use of indirect suggestion

As mentioned earlier, Erickson's reliance on indirect forms of suggestion and therapeutic binds increased in his later years. I have reduced the large number of possible indirect forms of suggestions and binds to 10. Each sentence presupposes a goal has been formulated. Then a simple formula for rephrasing the goal can be applied and the resulting sentence will sufficiently accomplish creating the form. These categories and formulae can be summarized as follows:

Open-ended suggestion. Increase elements of the sentence to one higher level of vagueness.

Simple pre-supposition. Use a pre-supposition and state the goal.

Focusing attention. Use 'wonder' or 'doubt' about the goal.

Truism. Use 'every person' or 'every company', etc., and state the goal in some manner.

All possible alternatives. Use a, or b, or c, or d, or 'not' as different ways of reaching the goal.

Apposition of opposites. Contrast a desired change toward a goal with some presenting change or process that remained in opposition to the goal.

Bind of comparable alternatives. Use 'A' or 'B' where both contain a form of the goal by pre-supposition.

Conscious/unconscious bind. Use the form: 'Your conscious mind is/may (some form of awareness) while your unconscious is/may (retrieval of the goal).'

Double dissociative bind. Use the form above and then reverse: Your conscious mind __A__ as your unconscious mind __B__, or perhaps your conscious mind __B__ while your unconscious __A__.

Pseudo nonsequitur. State the goal: 'A'; and then restate it with a rewording that sounds different: 'A(alt)'

18.5.3. A case example

The case example that follows has been truncated for brevity. The goal of providing a partial case example is to illustrate the principles, basic footprint and interventions mentioned above. The client is a 28-year-old woman who is experiencing a great deal of self-criticism and thinks she might be too sensitive to the opinions of others. She feels that she does not know how to pull together being the mother of two and keep her husband happy. She is hiding this feeling and trying to be strong on the outside because she believes she and her friends will find her to be without value if she cannot perform for them. She is the mother of a 5-year-old and is 3 months pregnant with another child. She does not know if her sensitivity is a 'plus thing or a curse'. She speculated that she might be able to use hypnosis to become less sensitive.

The initial treatment goals were to help her retrieve a feeling of acceptance and belonging, help her reduce her negative self-talk, assist her in altering her self-concept to imagine herself with these emotional options, and rehearse using them in a few common daily situations. The transcript begins at the end of our initial assessment phrase.

Client: That's the thing I don't know if it is a plus thing or a curse.

S. L.: [Sitting in the same posture as the client and speaking at the same rate of speed] Until you find out I think that you should keep your sensitivities and your ability to be moved by moving things, that is a real precious gift. It would be a shame if you were as stiff as Alexander Haig and so I think you should keep those things. I think that you should be

able to keep your reactions, being moved to tears by things that are happy and sad. And it's a joy sometimes too, but I don't think that you need to let it chip away your self esteem. So perhaps that's what we should work on, how you can continue to keep your sensitivity and not let it chip away your self esteem, because you're at the stage of having your second baby, shortly you'll be enjoying the security of a nest.

In this excerpt we can see how the client's experience is being matched, responded to and taken in a positive and nonpathological framework. The contact is sufficiently high for a new idea to be introduced without resistance. So, the discussion that preceded this as well as the above comment have accomplished the matching and blending stages of the basic footprint. These processes will need to continue throughout the session. The new idea of reducing the self-esteem problems was accepted along with the reframing of the positive aspects of her sensitivity. In the induction that follows, the indirect suggestions and binds are indicated in brackets.

S. L.: So, I wonder if you can uncross your legs and put your hands on your lap [focus awareness]. I don't know how you normally go into trance, do you know you can do that by taking off your glasses or by closing your eyes, or concentrating on something [all possible alternatives]. You could concentrate on your hands and maybe they will rise up to your face [focus awareness and pre-supposition]. One of them can rise up to your face as your eyes close [bind of alternatives]. Sooner or later everyone goes into trance in a way that's right for them [truism]. As I talk about things that may remind you of the ways that you can put yourself into trance, and the ways that you've put yourself into trance before, you will of course find that your conscious mind goes from idea to idea or from perception to perception, but your unconscious should be regulating the depth of trance so that the taking of information is useful [conscious/unconscious bind]. And disregard information that is confusing or unnecessary, because everyone needs to know that you are in control when you go into trance by the very fact that you hypnotized yourself and that you used my words as a stimulus for you own induction [open ended].

All your life you've known how to concentrate on an idea to get more awareness [open ended]. And your conscious mind can't just say how you do that

[focus awareness]. And with or without your conscious awareness, that hand again can move up off of your lap [focus awareness]. Your conscious mind doesn't begin to explain how your unconscious actually moves those small muscles gradually, even using those little jerking movements [conscious/unconscious bind]. It ought to bring you a sense of hope and a sense of comfort to realize that your unconscious does have the capability to move appendages and move ideas in a way that you didn't think possible [conscious/unconscious bind]. And maybe it's useful to find out that it is your left hand that is up in the air [focus awareness]. Because it is nice to know that you can be comfortable when you're left up in the air sometimes and maybe it will go all the way to your face, half way to your face, maybe it will float out to the side, maybe it will stay right there, and for some people it gets heavier and drops [all possible alternatives]. Everyone has their own way of having their hand indicate to them that they've achieved the kind of trance that they can learn from [truism]. And how you learn from the trance may parallel how your hand rises when it does, moved half way up to your face [pre-supposition]. So I wonder if there is a dissociation in your arm and shoulder that allows it to be comfortable [focus awareness]. And then some sense of solving your problem is already half way forming in your unconscious [pre-supposition].

While I was talking, your cheek muscles flattened, your breathing became slower, your hand moved half way to your face, your eyes closed, skin color became more pale [focus awareness]. And I think that you will discover that you can ignore things that are irrelevant and that your conscious mind will be decidedly interested in those things that are relevant and useful [open ended]. And I bet that you'll be glad to discover how much your unconscious learns about how hypnosis can be applied to the ease of child birth [referring to a relevant topic she did not request], even though you may have consciously been thinking about other things while I'm speaking today [conscious/unconscious bind].

In the course of this session several stories were told. The first story, omitted in this chapter, was structured to help Anna realize she would not lose her husband's love or friend's support if she told them about her true feelings of inadequacy.

The first story following the induction was an attitude protocol with the goal of coming

to believe that she could have more resources and problem-solving skills than she had believed were available to her. It juxtaposed two individuals who were trying to solve a riddle since extremely important personal gains or losses were at stake: 'How can I be myself when I don't know who I am?' One protagonist gave the impression of confidence in her success because she thought she could do anything (a position the opposite of Anna's). The other protagonist appeared to be on a path of failure because she knew that nothing she could think or do would solve the riddle and she was afraid that if she admitted her helplessness no one would like her (a position matching Anna's). In the end, the confident protagonist failed because success required recognizing that she had simply to be herself with an honest admission of 'not knowing' how to proceed. In having that skill, the second protagonist happened upon the solution to the riddle: 'by not trying to be somebody else'. In the attitude protocol, the clients are led to the surprising conclusion that what they feared would not come to pass but actually brought a resource they needed. Note, that the client comes to this conclusion, as it is the only one that fits the facts of the story and provides some sense of this ambiguous phase of the basic footprint of change.

The second story, found here in its entirety, is an affect protocol for belonging. That is, the experience of belonging and acceptance should be retrieved by the listener in order to make sense of the ambiguity. The value of indirection is clear in that the client's own meaning and experience is brought into play as the listener makes sense of the action, but at no time was the feeling requested by the therapist. Note that the process of the story is to make it clear that two positive protagonists are defined and then brought together. Finally, the physiological state of one of them is described and it is, of course, the same as that of the listening client, Anna.

S. L.: [Illustrate each action that defines each protagonist as positive] Jane had developed a very good friendship with her girlfriend. They flew kites together, they made sail boats, they jumped rope, they collected pretty stones that they would wash off and put in boxes. And they knew, they absolutely knew that they'd never be carrying briefcases with

credit cards in them down the streets, and they just hated people like that. Those people didn't have any fun at all, they thought, but then again they were only children. One of the things they liked to do involved bending over the bottom of those nails. They would take a bottle of nails in a sack up to the limb of a tree and they'd haul some boards up there, maybe use a rope, and then they would start pounding those nails into the boards to hold them together on the tree limbs. And the part that they liked the best was bending those nails over at the bottom when they were done so those boards wouldn't come out, making a nice comfortable, safe, little tree house. They would swing from the ropes on cloudy days and on sunny days. And every day Jane's friend would be there. It was just like God had supplied them with one another over the summer vacation.

And then they understood that school was going to start. Jane thought that she was going to lose her friend. And with two little feet under her desk, inside two little shoes with two little pennies, Jane sat and looked around the classroom only to discover that her friend was seated right beside her, and at recess they were able to play with each other, and after school they could do their homework together. And it continued for some time. Then one night when she was hoping that the telephone call would come to invite her to go to the ninth grade dance and no little boy called, the phone rang and it was Jane's friend. She wanted to go to the ninth grade dance too, so they went together. And a lot of girls went with other girls, and a lot of boys went with other boys. Finally Jane's family moved away and Jane went to other high schools, but she never forgot that special friend.

Some time after that, things were really looking their worst for Jane. She didn't know if she would ever graduate because she was having a heck of a time passing even her driver's-ed class. She wasn't yet aware, of course, of the fact that she was going to grow up and walk down some street with a briefcase and credit cards, because she didn't even know if she would graduate. She walked dismally to the mailbox and opened it up and there was a letter from her special friend. It was just enough to give her the strength to continue another attempt to study those insurance policies and write an adequate report for driver's ed.

She went to Disney World after graduation and before college. She was working there because it seemed like a nice place, and a lot of activity and

a lot of friendly people, including the biggest friend of all—Mickey Mouse. And when she checked into the underground dormitories where the people lived, how surprised do you think that she was to find out that her best friend of long ago was also living in the dormitory, also working at Disney World. They had a second childhood together. It was such a hoot to work together at Disney World, she said. And having matured more she wasn't really that sad when they went off in separate directions. And although she wished that she had discussed her plans for college with her friend, it totally slipped her mind.

Michigan State University is a long way away from Disney World and Justin Hall is a very big dormitory. And it is only half way across the campus from Bessey Hall but it is a long way across the campus from Acres Hall. And so it took three or four weeks on campus before Jane found out while she was staying in Justin her best friend was staying in Acres Hall. Walking down the sidewalk that day across Bessey Hall bridge leading to the American literature class, it seemed like everybody she saw looked like someone from her past, and that guy over there looked like somebody she knew, that guy looked like somebody she wished she knew from her high school, and that guy looked like somebody from home town, and that guy looked like somebody from Disney World, so did that girl. In fact, that girl looked just like her best friend. And so she convinced herself that it wasn't her best friend and kept on walking.

[This step moves the protagonists toward each other] From down the bridge she didn't know that the girl with the little ponytail who was walking towards her was having the same thoughts, and was unable to shake the thought. And that little shaking ponytail sure shook like her best friend. She thought, isn't it funny that you keep seeing things that aren't there when you feel lonely. And when they were only three feet apart she realized that it WAS her best friend and they ran towards each other and they embraced, giving out the loudest giggle of glee that Bessey Hall has ever had. As they hugged each other, tears of joy ran down their cheeks. Neither one of them could finish the sentence about how they were so happy that they had ended up at Michigan State and they hadn't even talked to each other. They couldn't believe that they were really enrolled here and how much fun it was to find a friend.

And they just hugged on that bridge for more minutes than you should if you want to get to class on time. [This step is to focus on physiological signs of protagonist that match the client] Signs of strain went out of their lips and foreheads, and they just closed their eyes and touched each other and patted each others back, sometimes they laughed. Jane's mouth was slightly turned up at the corner. Her skin was pink, muscle tonus had returned to her cheeks, a certain glitter returned to her eyes. You never know how your conscious mind is going to be surprised with the feeling of joy, a little wetness around the eyes, and they weren't embarrassed at all. They were happy they knew out loud how they cared for each other, they had lumps in their throats, they realized how fate had brought them together again. What a precious feeling to memorize and to know that you have with you forever. And Jane was probably thinking that that feeling would be with her for ever and now she knew she'd never have to give up that feeling. There was no way she could do anything but remember this moment and that feeling inside. Nobody had to tell her that that was the feeling of being wanted and worthy of fun and loving.

I think that the conscious mind never even cared, and it was the unconscious feeling of warmth, and openness and acceptance, breathing a little more deeply, standing a little taller, shoulders relaxed from the tension, the conscious mind never even knew it had ... expanding the rib cage while realizing that the tongue is relaxed. She didn't know that the job she had to do was to memorize that feeling. People don't know how you memorize something, how you find it in your chest, or your neck, your face, or it's an idea, a picture in your mind. Now let that feeling radiate until all parts of your body know it. You earned it and you deserve it. Jane had to get to lit class before she was too late to get the lesson for the day. They exchanged phone numbers and ran off, but that wouldn't be the end of it. She held onto that feeling.

A third story was now introduced. This story dealt with ways people can reduce the behavior of self-criticism. The story provided examples of the protagonist identifying a self-criticism and then exaggerating it to a humorous extreme. Then, the context is changed and the process is repeated. In each instance, Anna's face would reflect a seriousness with the identification of each of the protagonist's criticism and then

would reflect humor, and she often laughed as the criticism became ludicrous. It can be speculated that this associating of humor with previously feared self-criticism will continue to take the 'bite' out her self-critical behavior. Furthermore, the process of applying this cognitive behavior was taught repeatedly in the behavior protocol metaphor.

Finally, a self-image rehearsal metaphor was presented. This story begins where an earlier metaphor, that for affect protocol, ended. In this manner the session creates a multiple embedded metaphor effect discussed elsewhere (Lankton and Lankton, 1983). This metaphor is presented in partial form so as to illustrate the basic parts of the steps involved.

Jane had been sitting there with that feeling all through American literature class of having embraced her friend on the Bessie Hall Bridge. She still felt the warmth, she still felt the smile, her face still had a glow on it, and her heart was still pounding like she was in love, because she had her best friend. She couldn't see what the professor could see through his eyes. Or she'd be able to see a sweet delicate little swallow; her head perched vertically between her horizontal shoulders, back relaxed somewhat as she leaned forward with her elbows on the desk. Her eyes were closed and not twitching. It was too bad that she didn't have a mirror so that, while she had that feeling of relaxation, she could see her face with that feeling of joy and the acceptance and love, because you should be able to see your face when you have that feeling of joy, acceptance and love. And, you can see a smooth forehead, and relaxation of the little lips slightly curled at the side, pink color of the skin, easy breathing, and the warmth around the body that seems to come because the shoulders are rolled forward just like the embrace is still happening.

And she wasn't thinking of lit class at all, of course. Every time the professor said something about somebody's life and literature, the scene changed, and it wasn't just her face she saw. She was seeing herself conducting various activities that she'd never dreamed about before, while she saw herself have the feeling of acceptance and joy, and comfort. Some noise happened and she saw the scene change and there she was going through the shops with that feeling of comfort and joy, window shopping and buying clothes. She hadn't realized how her

unconscious had been capable to memorize that feeling and give it to her conscious mind, so that on the outskirts of her conscious mind, she could form a visual picture of herself walking down the street and feeling that sense that she had gotten and seeing it on her face. She saw it again when the scene changed and she watched herself talking to strangers. Her face said 'everyone likes me', and that is what she thought. And when she saw herself with that feeling, there was another change and another posture as she saw herself sitting in class with that same feeling, studying with that same feeling. And he must have said something about family, and life and America because she imagined herself in her home in her living room, with that same feeling. She chuckled to think that she had cleaned the house while she had that good feeling. It might be a little uncommon, but she couldn't see why not. In fact she could see herself have that same feeling and the same thoughts about how nice it was to know that her sense of being liked went so deep.

It should be apparent in the above transcription that three components were used to create this feeling-enriched visual rehearsal: desired feeling resources were retrieved, a visual image of the self was formed reflecting these feelings, and the enhanced visual image of the self was rehearsed through several realistic scenarios. In each story the continued use of indirect suggestions and binds can be found, as using them will enrich the mental search process and increase the experiential involvement of the clients.

While a large portion of this case session has been presented, the entire case session is too lengthy to recreate in the context of this chapter. However, Anna was in trance for nearly 1 hour and she heard the metaphoric stories dealing with accepting her particular emotional life as being tolerable, reducing her self-criticism and rehearsing her self in different contexts with feelings of acceptance and without self-criticism. Finally, a reorientation was suggested:

S. L.: Sooner or later a dissociation that developed in your hand will leave your hand [truism] and help you realize a lot of other things your conscious mind was paying attention to [focus awareness]. Maybe your unconscious also learns how to apply that dissociation to matters that are imminent and your unconscious mind doesn't even have to know how [conscious/unconscious bind].

I hope that when you open your eyes and come out of trance, that you only remember as much as is useful to you [focus awareness], like my client Diana did when she remembered only a riddle and a feeling, eventually only a feeling, richer than a riddle [anecdote]. But know that your unconscious can take those suggestions that are relevant and build on them for your own betterment and comfort even while your conscious mind may not fully understand what your unconscious will do with them, or maybe you'll consciously understand only small bits from time to time as necessary, so that you gain an appreciation for the wisdom of your unconscious working for your own betterment, as you or your children learn things that you can be glad to teach them [double dissociate bind]. So pretty soon you'll probably be wanting to reorient the rest of your body like your fingers begin to do, and the skin color will probably come back here and there [focus awareness]. And then your eyes will open eventually [pre-supposition]. Sooner or later you will reorient yourself back into the room [truism].

Anna: Gee. I mean wow! I feel like I am still thinking a lot about, um, well I don't really know what I'm thinking about ... I mean stuff you said ... I was just thinking that ... maybe life isn't really so hard, you know, like ... I feel sort of like [begins crying] crying in relief. [drying her tears] You know, it's like something that scared you is over and you can cry—like that sort of tears. [closes her eyes and sits quietly—looking almost tearful].

S. L.: You can expect a lifetime of relief, I bet!

Anna: [nodding her head slowly and then gradually building a smile and opening her eyes]. Thanks.

My comment that she may 'expect a lifetime of relief' was intended to go to the next phase of the basic footprint for change—reframing. That is, Anna had begun to resolve the ambiguity stage by concluding that she felt relief. However, she suggested it was a here and now relief for things in the past. If she stayed with that conclusion, the future would remain to be 'solved' with relief, so to speak. I chose to offer a reframing comment that implied this relief was not over, but in fact was just the beginning of much more success and relief. Her response indicated that she did not challenge that reframing, and this phase of the basic footprint was successfully concluded, at least for this session.

Anna gathered her possessions and stood, extending her hand to shake my hand. I suggested

she call me for further sessions rather than schedule one immediately. Letting this learning and alteration of mood stand as a success conveys the meaning that she has accomplished something by her trance work. On the other hand, scheduling another session immediately conveys the meaning that she has much more work to do before she has accomplished something substantial. Weighing the factors in this case, I opted for the former choice, letting her use her own unique way of unfolding this (at least temporary) new attitude and feeling in her real life. This final act of goodbye was an act of co-creating the outcome with trust that Anna would do a responsible and competent job sculpting her life with only these new resources to begin the task.

Anna contacted me a year and 3 months later to say that a baby girl was born and that she and her husband and children were all doing fine. They were taking their first vacation on a family cruise ship.

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CHAPTER 19

Foundations of clinical hypnosis

Michael R. Nash

19.1. Introduction

This chapter is for those readers who are unfamiliar with the technical aspects of clinical hypnosis. In introducing the practitioner to the techniques of hypnotic induction and clinical hypnosis in general, it must be emphasized that the pre-eminent factor determining how fully a patient experiences hypnosis has almost nothing to do with therapist technique or any other therapist-related factor for that matter. The extent to which a patient experiences hypnosis is primarily determined by his/her pre-existing trait-like capacity to experience the perceptual, behavioral and experiential shifts we associate with hypnosis—in short, hypnotizability. This ability is stable over time, and is unrelated to any personality characteristics, at least in any simple linear fashion. A highly hypnotizable subject will become hypnotized under a host of therapist conditions and therapeutic settings. In fact, formal induction is often not necessary. For all patients then, the extent to which patients become hypnotized has more to do with what ability they bring to the session, than with what the therapist does or says.

Learning to hypnotize someone *per se* is fairly easy. It is an elementary skill that can involve little more than reading a standardized script to someone else. However, learning to do hypnosis *therapeutically* is another matter entirely.

Here the therapist must marshal all of his/her clinical abilities: empathy, disciplined compassion, conceptual rigor, theoretical sophistication and technical savvy, to use hypnosis maximally in service of the therapeutic goal—whether it be symptom removal or insight. The analogy to surgery seems apt: anyone can wield a scalpel so as to cut. Cutting *therapeutically* involves years of training and experience. Use of hypnosis does not, and cannot, make a poor therapist better. Its use in no way compensates for limitations that the therapist brings to the consulting room. If anything, therapist limitations may be writ larger in sessions when hypnosis is used precisely because the pace and emotional intensity of the interaction can be accelerated.

Thus, the two necessary pre-conditions to therapeutic use of hypnosis are: (1) a patient who is at least minimally hypnotically susceptible, (about 80–90 percent of the population); and (2) a therapist who has solid diagnostic and clinical skills. One does not really become a better clinical hypnotist by learning new things to say during hypnosis. One becomes a better clinical hypnotist by sharpening and refining ones clinical skills in general, and applying those general clinical skills to the environment of hypnosis. Nothing happens *with* hypnosis that does not also happen *without* hypnosis. Nevertheless, there are certain parameters and techniques specific to hypnosis and suggestion

that constitute a helpful body of knowledge for clinicians wishing to employ hypnosis. Below we describe the pre-hypnosis interview, and then move to the six phases of hypnotic procedure. We then give an example of how to instruct patients in self-hypnosis.

19.2. The pre-hypnosis interview

As in many forms of psychotherapeutic intervention, it is helpful to provide the patient with some expectations about what the hypnotic procedure will be like. There is a modest but informative nonhypnosis literature on the advantages of preparing patients for the psychotherapy process (Strupp and Bloxom, 1973; Heitler, 1976; Marquardt *et al.*, 1975). It is especially important to do when planning to introduce hypnosis into the treatment. I call this preparation the ‘pre-hypnosis interview’. There are several reasons for doing such an interview: first, the therapist needs to be very clear on the patient’s expectations and motivations regarding hypnosis. Second, the lay literature and the mass media are saturated with misinformation about hypnosis. Hence there is often a need to disabuse patients of some of these misconceptions. Third, the therapist needs to clearly articulate the reasons for doing a hypnotic procedure, underscoring that it is not necessary for the patient to ‘do well’ during hypnosis, but merely to experience whatever happens. This pre-hypnosis interview is typically of 10–20 min duration, and is really an interactive process in which the therapist carefully listens to the patients construction of hypnosis (the inquiry phase), but then more actively shapes the therapeutic frame in light of the aim and nature of the intervention

Usually during the first part of the interview, the therapist asks the patient open-ended questions pertaining to their attitude about hypnosis. If fears are verbalized, the therapist inquires about them. Are there unrealistic expectations about treatment results? Is the patient inclined to an excessively passive stance in regards to hypnosis? Are issues of control figural for this patient? Does the patient anticipate a wildly abreactive experience involving emergence of ‘long-buried’ trauma? Are there religious

values that come into play? Does the patient seem motivated?

The therapist then seeks to shape the patient’s expectations and attitudes in terms of what we know about hypnosis and what will be effective during the ensuing treatment. Depending on the patient’s attitudes and expectations about hypnosis, typical points that might be mentioned are:

1. *Setting the tone for the first hypnotic procedure.*

When I see you next week, we will be doing a hypnotic procedure which will take about 30 minutes. It will have nothing to do with your problem ... I simply want you to become familiar with hypnosis and I want to understand more about how you experience it. You do not need to be an extraordinary hypnotic subject to gain benefit from hypnosis. In fact, even people who at first do not experience hypnosis much can be helped with hypnosis nonetheless. Almost everyone can experience hypnosis to some extent, and I just want to know what hypnosis is like for you ... and I want you to become more familiar with it as well.

2. *People do not lose consciousness when hypnotized.*

You will know what is going on around you, you will be attentive, and you will remember what we did during hypnosis just as you would if you were not hypnotized. In fact, this is especially important in our work because I want you to tell me what you are experiencing so that I know what works best for you. Remember, your responses are fully under your control.

3. *Hypnosis is different from sleeping.*

You may find it to be a somewhat dreamy state in which your attention can be fixed on some particular thing, while other things fade into the background. You will probably find that you can become absorbed and focused on interesting events with greater ease.

4. *Discouraging excessive self-monitoring.*

It would be most helpful not to try to make experiences happen, but instead just let things happen by themselves. If you find yourself wondering whether or not you are hypnotized, remember that what we are most interested in is *how* you experience what we do, not *if* you experience one thing or another.

5. *Establishing mutuality.*

Hypnosis is not something that I do to you. Nor is it something that you do by yourself (although that may come later in our work). But for now hypnosis is something that we do together. And we can be curious about how you will experience hypnosis.

6. *Emphasis on the nature of the hypnotic experience.*

People differ in the way they respond to hypnosis. It is not necessary that you experience everything I suggest for us to work productively together. No one experiences everything in hypnosis.

7. *Contextualizing the hypnotic experience.*

Responding to hypnosis is a perfectly natural ability. It is just that in working together in this way we can use your ability in a more systematic and productive way to help you with your problem.

Disabusing patients of gross misconceptions about hypnosis can be helpful. However, since imparting information is *de facto* delivering a suggestion, one must be careful not to ‘overdo’ the disabusing process. Below is a list of typical misconceptions about hypnosis.

1. The hypnotist can make me do things that I will not remember later.
2. In hypnosis people can be made to do immoral things that they would not otherwise do.
3. Hypnosis means losing control of my behavior.
4. Hypnosis is a form of brainwashing or an X-ray of the mind.
5. I will tell the hypnotist secrets about myself without wanting to.
6. I will be passive and under the complete control of the hypnotist.
7. The therapist will hypnotize me, and when the hypnosis is over, my problem will be solved.

19.3. The initial hypnotic procedure

In this section I give specific examples as to how to proceed during the first hypnosis session. I make two assumptions: first, that the clinician and the patient are relatively inexperienced with

hypnosis; second, that the pre-hypnosis interview has been properly completed as per above. Typically there are six phases of the initial hypnotic session: induction; deepening; exploration of hypnotic experience; preparation for subsequent hypnosis; termination; and post-hypnotic interview. Of course, in later therapeutic work a utilization phase (employing hypnosis in service of therapeutic movement) figures prominently. But the goal of the initial hypnotic session is not therapeutic *per se*. It is to introduce the subject to the experience of hypnosis and to inform the therapist about the patient’s responsiveness.

19.3.1. Phase I: inductions

As per the American Psychological Association Division 30 definition:

Hypnosis typically involves an introduction to the procedure during which the subject is told that suggestions for imaginative experiences will be presented. The hypnotic induction is an extended initial suggestion for using one’s imagination, and may contain further elaborations of the introduction (Green *et al.*, 2005, p. 262).

Our ‘pre-hypnosis interview’ serves as the ‘introduction’ mentioned in the above definition. As we see, the second component of the hypnotic procedure, the ‘induction’, is in fact nothing more than the first suggestion. The choice of what suggestion to use as the ‘induction’ is unimportant. Typically though, this first suggestion is slowly paced to allow the novice subject time to be unrushed. Below, I provide a word-for-word script of four different hypnotic inductions: eye fixation/relaxation; arm drop; arm levitation; and coin drop.

19.3.1.1. The eye fixation/relaxation induction

Perhaps the most common type of hypnotic induction is one that incorporates suggestions for eye fixation, eye closure and relaxation. This is the approach I detail below. The eye fixation/relaxation suggestion is popular clinically because it soothingly invites the patient’s participation in a manner consistent with the tenor and aims of psychotherapy. What follows is a procedure that owes much to the family of Stanford

Hypnotic Susceptibility scales (Weitzenhoffer and Hilgard, 1959, 1962, 1967).

Now I would like you to find a spot or an object on the wall or the ceiling, any spot will do. Perhaps it will be a spot on one of the paintings or perhaps a spot on the wall or an area where the sun strikes the wall or the ceiling in some particularly interesting manner.

I would like you to find a spot and focus your eyes on that spot. I am going to call that spot the target. I would like you to focus your eyes on the target and listen to my words

By doing so you will find out what it is like to experience hypnosis.

I assure you that no matter how deeply hypnotized you become you will remain in complete control. Hypnosis is really something that you and I do together.

Eyes comfortable and heavy, focus on the target, continue focusing your eyes on the target and listening to my words.

There is nothing particularly mysterious or other worldly about hypnosis. It really is a quite natural ability that almost everyone has to some extent. In a way hypnosis is like being absorbed in a movie that you are watching and forgetting that you are part of the audience but instead you become part of the story, or perhaps you are one of those people who enjoys listening to music and can be transported by that music so that everything else fades into the background and the music becomes figural, center stage.

Continue to focus on the target, if your eyes should wander away from the target, that's fine but just bring them back to the target. You may notice that the target moves about or again changes color, and if that should happen you can let it take place

Just concentrate on the target and listen to my words, allowing yourself to relax more and more. As you relax more and more you become aware of a certain kind of drowsiness, a relaxation coming across your entire body. Pretty soon you will notice that the object that you are staring at is changing a bit, perhaps it is becoming nebulous or perhaps changing colors ... you find that the eyelids are beginning to get heavier and heavier and you are looking forward to finding out what it is like for your eyelids to grow heavy and close in this way ... what it is like to go into hypnosis. What do you notice?

It is a strain to look at a single object for so long and it would be so nice to relax completely. *Allow yourself to relax completely.* As your eyelids become heavier and heavier you may notice that your eyes become wet from straining ... so tired and wet from straining. Your eyes may soon close by themselves and when they do you can let that happen ... and drift into a comfortable state of relaxation because you will gradually, and at your own pace, be drifting into hypnosis.

Soon your eyes will close themselves and when they do, you can really allow yourself to relax completely. As your *eyes* become heavier and your *body* becomes more and more limp and relaxed. Your eyes and your body drifting together into hypnosis. Your eyelids become heavier [patient's eyes being to blink], blinking, blinking [patient closes eyes].

That's right, your eyes are closed now and they will remain closed for the duration of our work together but if you would wish to open your eyes while remaining deeply hypnotized, you could do so, but you would do so only for a moment and then close them again. But most likely your eyes will remain comfortably closed as you continue to listen effortlessly to my voice.

Now that your eyes are closed you can really settle into a deep state of relaxation and hypnosis. In a moment I'm going to touch the very top of your head with my hand and, when I do, I would like you to notice these warm waves of relaxation that begin to emanate from the very top of your head and pass through your entire body. In a little while I will touch the top of your head and when I do you will notice these wonderfully warm waves of relaxation that pass from the top of your head through your entire body. And you will become even more comfortably hypnotized. I am touching your head now. [therapist touches head for 2 s].

Allow those warm waves of relaxation to radiate down, down through your entire body. Where do you feel these waves of relaxation right now? [patient responds 'at the top of my head']. Good, I am going to count from 1 to 20 and as I do you will become more and more relaxed and continue to enter a comfortable state of hypnosis in which you can experience many different things.

1. Allowing those warm comfortably warm waves of relaxation to pass down through the top of your

head, across your facial muscles so that the muscles of your forehead, your eyes, your face become limp and relaxed, limp and relaxed ... 2. Allowing these warm waves of relaxation to pass down through the back of your head and into your neck, you know how tense your neck can become during the day but as these warm waves of relaxation pass through it, your neck becomes limp and relaxed, limp and relaxed.

3, 4. Allowing these warm waves of relaxation now to pass down through your shoulders, your shoulders now dropping limp and relaxed, limp and relaxed as you effortlessly listen to my voice and allow yourself to drift into comfortable state of relaxation and hypnosis ... 5–6. Allowing these warm waves of relaxation to pass down through your shoulders and into your arms down toward your elbows and down toward your wrists, your arms are now limp and relaxed as these warm waves of relaxation pass down through your hands pushing any excess energy in your arms and hands out through the ends of your finger tips.

7–8. Now letting these warm waves of relaxation pass down through your chest and your upper back and you can be aware, perhaps not for the first that your breathing is becoming more and more slow and regular, slow and regular as these warm waves of relaxation pass down through your chest, down your back, limp and relaxed, beginning to become more and more sleepy and drowsy as your breathing becomes more and more slow and regular ... 9 – 10, Letting these warm waves of relaxation pass through your stomach muscles and your lower back. How good it feels to be so completely relaxed, how good it feels to feel the support of the couch and these wonderful waves of relaxation that transform the relationship between your body and your mind because you are comfortably drifting into hypnosis at your own pace.

11–12. And you can be aware of how these warm waves of relaxation passed down through and beyond your waist, down your legs towards your knees and your thighs ... relaxed, legs comfortably relaxed, allowing these warm waves of relaxation to continue to pass through your legs, over and through your legs ... 13–14. Down beyond your knees ... 15. Down towards your ankles and pushing any excess energy out through your toes.

16. More and more sleepy and drowsy, drifting along, sleepy and drowsier, and as you listen to my

voice, you can be aware that no matter how deeply hypnotized you become, you will always be able to hear my voice, you will always be able to hear my voice no matter how deeply hypnotized you become.

17. And you are now becoming more and more aware of how really relaxed and sleepy and dreamy you have become. More and more relaxed and, as you are aware of how these warm waves of relaxation continue to permeate through your entire body, you can continue to listen effortlessly to my voice going deeper and deeper into hypnosis.

18. More and more deeply relaxed, more and more sleepy, more and more drowsy. You are curious about how your mind and body work together in this hypnotic state ... it is so comfortable, so pleasurable to be so deeply hypnotized and relaxed as you are now, with each breath it seems that you go deeper, more and more sleepy, more and more drowsy, yet listening effortlessly to my voice. We are working together to find out more about what hypnosis is like for you.

19. It feels good to be drowsy, to be hypnotized ... as we find out what hypnosis is like for you.

20. Deeply relaxed and deeply hypnotized.

19.3.1.2. The arm drop induction

There is some merit in using a suggestion for an ideomotor response as an induction: it affords the therapist the opportunity to observe the patient's responsiveness throughout the procedure.

I would like for you to sit comfortably in your chair and close your eyes, that's right, and I would like for you to hold your right hand and arm straight out in front of you, palm facing down, that's right, hold your right arm straight out in front of you, palm facing down. I would like you be concentrate on this right hand and arm and be aware of every feeling that you are having in your right hand and arm right now at this very moment.

As you know, a person is not usually aware of all the sensations he [use 'she' if the patient is female] is having in his body because he is not paying attention to the particular parts of the body where these sensations are taking place. But if you pay attention to a particular part of your body as you are now paying attention to your right arm and hand, then you become aware of many different things.

As I have been talking, perhaps you have noticed a feeling of tension in your hand or in your arm or maybe you have noticed a tingling sensation ... or a tendency for your fingers to twitch ever so slightly ... or you have noticed something I have not mentioned ... There may be a feeling of warmth or coolness in your hand or your arm or in both.... Pay very close attention to your hand and arm and tell me now, what are you experiencing? [Patient responds]

That's good. Now, I would like you to continue to pay very close attention to your arm because something interesting is about to happen to it. It is beginning to get heavy ... heavier, and heavier and as I continue to talk you can be aware that thinking about this heaviness creates a tendency for your arm to become heavy, very heavy and you will find that in a moment your right hand and arm will become so heavy like lead, so heavy that your hand and arm will gradually very slowly begin to move down, more and more down. Notice what it feels like.

The heaviness in your right hand and arm grows. And as it does you can be curious about this heaviness because as the heaviness in your arm grows more and more it is a sign that you are becoming more and more deeply relaxed and more and more hypnotized.

Allow the heaviness in your arm to grow more and more and as the heaviness grows you become more and more relaxed and sleepy, sleepy and dreamy. Notice how as your arm moves—just as it is now, gradually moving down, that's right, your arm gradually moving down,—you can learn what it is like to be profoundly relaxed and comfortably hypnotized.

Deeply relaxed, deeply hypnotized as your arm moves down, you go deeper into this comfortable state of relaxation. That's right, your arm is moving down and you are becoming more and more deeply relaxed ... hypnotized ... drifting down ... more and more deeply, more and more comfortably, relaxed.

Notice how your breathing is changing and how as your arm moves down more and more, you can continue to listen to my voice effortlessly letting everything else fade into the background. It is as though your arm, as it moves down towards your lap, signals to you and to me how deeply relaxed and hypnotized you are.

[if patient's arm has not moved much the following component might be added] Your arm is more and

more heavy and you are becoming more and more relaxed and hypnotized. Now as I continue to talk, you can imagine holding a bucket in your right hand it is empty right now, holding a bucket in your right hand, holding a bucket out in front of you in your right hand. You can sense its color and its weight right now ... What color is it? [patient answers]. I am going to count from 1 to 10 and with each count I will silently pour a quart of water in the bucket and your hand and arm will grow heavier and heavier, moving down more and more.

1. I am adding a quart of water, can you picture the water right now. That's right, you can picture the water right now. I have added a quart and your hand and arm are feeling much heavier.

2. I am pouring another quart of water in, you can hear the water pouring in the bucket and your arm getting heavier and heavier, moving down more and more ... 3. The third quart ... 4. Another quart as we continue to work together to help you go deeper and deeper ... 5. More water ... Moving down more and more and as your arm moves down you become more sleepy, more drowsy, more and more deeply relaxed, breathing slowly and regularly, letting everything else fade into the background as your *arm* continues to become heavier and heavier and *you* continue to go more and more deeply and completely into hypnosis.

6–7. More water ... More and more down, more and more deeply relaxed, more and more hypnotized ... 8–9. Almost there. Your hand is almost in your lap and when it reaches your lap you will be completely relaxed, deeply hypnotized, listening without effort to my voice ... 10 [hand reaches lap] That's right, your hand has reached your lap now. You are relaxed, dreamily hypnotized ... your right hand is in your lap, and while you drift along comfortably and deeply hypnotized, your hand returns to normal. No longer heavy. Now let's move on to something else.

19.3.1.3. The arm levitation induction

Another induction is an ideomotor suggestion for arm levitation.

Please put your right hand on the table, I want you to concentrate all your attention on that hand. As you look at it, be aware of all the sensations and feelings in the hand. For example, you are aware that it is sitting on the table. There is a weight there.

You are aware of the texture of the table. You can keenly sense the position every finger has toward every other finger.

And there is the temperature of the fingers, which ones are a little warmer and which ones are a little cooler than the others.

As you look at that hand with great concentration, you are going to notice that one of the fingers of that hand will feel especially different from the others. Now, it might be the thumb or the little finger or perhaps the index finger or the big finger or the ring finger, but one of them will feel distinctly different from the other, and that feeling may be that it is a little more warm or that it is a little cold. It could be that it kind of tingles a little bit or that it is numb, it could feel lighter but if you concentrate well you will be able to find out which finger it is that has the different sensation from the others.

And as you pay close attention to that particular finger, that finger will lift itself a little bit from the table over the others. Now concentrate on that, and you will notice that one of the fingers will tend to lift itself up from the table a little. [patient's index finger lifts slightly] Oh yes, it's your index finger. We can be curious about how light the finger must be to rise in this way. And as you think about this lightness, the lightness in your finger grows even more....

moving up more and more and as you concentrate on this lightness this pleasant lightness in your finger, you will notice that lightness spreads to your other fingers. One by one your fingers and your thumb will rise to the level of your index finger.

One by one, that's right, one by one your fingers, the feeling of lightness spreading from one finger to another. That's right, there is a light feeling as though your fingers were corks, just very light and buoyant, floating and buoyant.

Now go ahead and close your eyes as you drift along in this relaxed and comfortable state, curious about how becoming more relaxed will enable your hand and arm to experience even more.

Now what I would like to do is, I'm going to touch your wrist, imagine that I am tying a string loosely to your wrist, here ... I am doing it now [therapist touches wrists as though tying a string loosely around wrists] and on the other end of that string is a balloon, a balloon of a particular color, it is not filled yet with helium but it soon will be....

and that string is loosely tied to your wrist and when the balloon is filled with helium, your hand, not just your fingers, your entire hand and arm will begin to feel lighter and lighter. The balloon is not yet filled with helium, but soon it will be. What color is the balloon? [patient responds that the balloon is blue] That's right it is just lying there on the ground now, it's a dark blue color. Now imagine the balloon is being filled with helium, the balloon is getting bigger and you can hear the balloon filling, filling up with helium and you know the way balloons become brighter and lighter when they are filled with helium until the rubber is taut and you can almost see through this beautiful blue balloon filled with helium and rising off the ground and this string around your wrist becomes taut.

You can be curious about what is beginning to happen to your right hand and arm as the balloon begins to tug, tug and pull at your wrist, that's right, your hand and arm are beginning to lift higher and higher and as your hand and arm raise higher, higher and higher, becoming lighter and lighter as the helium balloon tugs on your wrist, your hand and arm began to move up and toward your nose and when your hand touches your nose, you will know you are deeply relaxed and hypnotized.

[patient's hand and arm begin to slowly move upward] That's right, higher and higher and as your hand moves higher and closer to your nose, a gentle breeze can blow the balloon in such a way that your hand and arm move toward your face, closer and closer to your nose, gently pulling, tugging, moving, lighter and lighter and as your hand is moved and pulled and made lighter and lighter by this balloon, *you* drift more and more comfortable into hypnosis.

More knowledgeable, finding out more about how your mind affects your body in this very relaxed, deeply hypnotized state.

That's fine, the hand has now touched your nose, and settles there, now I am going to touch your wrist as I untie the balloon ... [therapist gently takes wrist between thumb and forefinger and holds it for a moment] ... as I touch your wrist, I will hold your wrist while I release the string ... and as I do you can watch the balloon go high in the sky and I will place your wrist back in its resting position as you remain deeply relaxed and hypnotized.

Deeply relaxed, deeper and deeper, deeper into hypnosis. Your hand and arm are comfortable

again, relaxed in their resting position, normal and comfortable as you continue, deeply relaxed and deeply hypnotized.

19.3.1.4. The coin drop induction

The coin drop technique can be used in a number of ways. If the patient is situated over a noncarpeted floor the sound of the coin dropping can be incorporated in the procedure in the form of a suggestion that ‘when you hear the coin drop to the floor you will know that you are deeply relaxed and hypnotized’

Now I would like for you to seat yourself comfortably and close your eyes. I am going to put a coin into your right hand like this [puts coin in patients right hand] ... and perhaps you would like to hold your arm straight out and make a fist around this coin, I would like you to make a fist around this coin. Be aware now of the warmth in your right hand and the warmth that surrounds this coin.

As you concentrate on the warmth in your hand at this very moment, you can be aware of how the coin is warming up as well. I would like you to imagine now that this is a very special coin because it has the characteristics of a coin *and* it has the characteristics of a balloon. Imagine this coin as a balloon, your hand is surrounding a balloon, this coin balloon, and the warmth of your hand surrounds the balloon, warming it, warmer ...

And as you know, the warmth of a balloon determines how large it is. The air in a balloon expands when it is warmed and as the balloon-coin becomes warmer and warmer it begins to expand, it expands inside your hand. Warmer and beginning to expand.

Eventually as the balloon gets warmer and warmer, it will press against the inside of your hand until your hand gradually opens as it presses against your fingers and your hand. Imagine the balloon filling with air in your hand, pushing against the inside of your hand, trying to force the fist open.

Warmer and warmer now, gradually, very gradually forcing your fingers open, warmer and warmer, soon your fingers will begin to open of themselves, you can feel the fingers beginning to move by themselves. [patient’s fingers move, but only very slightly] That is right, your fingers are just now beginning to move. Your fingers are responding, and moving ... the pressure from the balloon-coin is having an effect.

Now I am going to gently touch the top of your right hand and, as I do so, you will notice that the warmth grows even more on the inside of your hand and the balloon-coin expands even more.

I am going to count to 10, each time that I touch your hand, I will count, and as I do your hand will become warmer and warmer and the balloon will swell more and more. This is a very special balloon-coin so that by the time I reach the count of 10 your fingers will be opened and the balloon-coin will fall upon the floor and you will hear it and when it does fall on the floor you will know that you are deeply and comfortably hypnotized.

[therapist gently strokes back of hand at each count] Now I will begin to count 1, beginning to press more and more against the inside of your hand, 2. Warmer and warmer, let the warmth flow through your hand. 3. Warmer and warmer, the comfortable warmth increases in the inside of your hand. 4–5, Warmer and warmer your fingers beginning to move more and more, that’s right, moving of themselves, you can find your fingers moving of themselves. 6–7. That’s right, fingers beginning to open. 8–9. Soon you will hear the coin drop and when you do you will be deeply relaxed and deeply hypnotized listening effortlessly to my voice. 10. There, that’s right, the coin is dropped and you are deeply relaxed and deeply hypnotized.

You can be curious about what the hypnotic state is like as you become more and more deeply relaxed and hypnotized with each breath with each passing moment.

19.3.2. Phase II: deepening procedures

Here I offer two types of techniques that can be used to ‘deepen’ the patient’s experience of hypnosis further. The same structural principles apply for these techniques as apply for the inductions. In fact, any induction technique can also be used as a deepening technique. The two general categories of deepening techniques are: fantasy/imagery techniques and somato-attentional techniques.

19.3.2.1. Fantasy/imagery deepening technique #1: the spiral staircase

In a little while I am going to stop talking for a bit and, when I do, I would like you to imagine yourself

walking down a very beautiful and quiet spiral staircase. The kind that winds down and around, down and around, down and around.

Imagine, if you will, a spiral staircase now as I am talking. It is a very beautiful and quiet spiral staircase with an interesting carpet, plush and soft, your favorite color, and as you look further down, the stairs seem to fade out into a soft, warm darkness. As you walk down this beautiful staircase you slide your hand along the smooth hardwood banister. In a little while I will ask you to walk down this beautiful spiral staircase at your own pace ... and you will note that with each step you take with each slow step you take down this beautiful ... spiral staircase, you will go deeper and deeper into hypnosis. [with some more fragile patients the therapist might suggest that they both walk down the stairs together]

In a little while I will stop talking for a bit and when I do I would like you to imagine yourself walking down this beautiful spiral staircase. The kind that goes down and around, down and around, down and around, and you will note that with each step you take, with each slow step you take down this beautiful spiral staircase you will go deeper and deeper into hypnosis. You can go at your own pace, going deeper and deeper as you like until when I speak again you will be much more deeply relaxed and deeply hypnotized. Go ahead and imagine yourself walking down this beautiful spiral staircase with each step going deeper and deeper into hypnosis. [Therapist is silent for 1 min]. That's right ... no longer walking down the spiral staircase now ... deeply relaxed and deeply hypnotized.

19.3.2.2. Fantasy/imagery deepening technique #2: the beach

Now as you drift along comfortably, deeply relaxed and deeply hypnotized listen carefully to what I have to say. In a little while I am going to count from 1 to 5, and when I reach the count of 5 you will find yourself at that special ocean beach about which you told me today. I am going to count from 1 to 5 and when I reach the count of 5 you will be there, relaxed and comfortable, with each passing moment going deeper and deeper into hypnosis. Now I will begin to count and when I reach the count of 5 you will be there and you will be able to tell me the things that you see and the things that you hear and smell and feel.

1–2. You are going to the beach, soon you will be there. 3 ... and you will be able to tell me all about it. 4 ... once there at the beach you will find yourself going more completely and deeply into hypnosis ... at the next count, you will *be* there ... at the beach. 5.

Where are you? [patient responds]. What are you doing? [Patient responds], What do you see, hear, feel. [the Patient responds] that's good, this is a very special place which *means* relaxation.

As you lie back on the sand and feel the comfortable warmth of the sun, the comfortable warmth of the sun surrounds you. As you have already noted, you can hear the waves and the sea gulls ... feel the support of the sand, how good it is to be supported in this way. I would like you to pay even closer attention now to the sounds of the surf ... as you know if you listen to the surf you can hear every individual gentle wave breaking on the shore and if you listen another way, the waves all seem to blend together into a kind of rolling, gentle cascade.

Listen to the surf so that you can hear different waves breaking at different times, rhythmic waves, one wave after another How do you hear them? [patient indicates that waves can be heard separately]. And you discover that as you listen, it is almost as though the waves seem to break every time you exhale ... there is a certain rhythm, a timing and pacing to our work together.

And as you listen to the waves breaking on the shore, you can note that with each wave, with each breath ... you go deeper and deeper into hypnosis. A very special rhythm of your breathing and of the waves begin to move together, as you go deeper and deeper. I am going to stop talking now for a bit and you can continue to listen to the waves breaking on the shore gently. With each wave that breaks gently on the shore you go deeper and deeper asleep. [Therapist is silent for 1 min]. Good, deeply relaxed and deeply hypnotized.

19.3.2.3. Fantasy/imagery deepening technique #3: diving under the water

A particularly useful technique to prepare patient's for expressive, insight-oriented applications of hypnosis employs a metaphor of going beneath the surface for the sake of discovery. This example is adapted from Brown and Fromm (1986).

Imagine that we are going on a deep sea exploring trip down in the warm waters off the Caribbean. We have come to a beautiful reef where a group of young deep sea explorers is preparing a trip in an enclosed capsule into the depth of the ocean.

The capsule can be lowered from a ship on a steel cable. You can safely make a decent of hundreds of feet down into the ocean. Imagine a spacious metal sphere with four port holes, thick plate glass, two or three people can go inside the capsule and sit in it and observe. They are supplied with oxygen lines and a telephone line to the boat on the surface. Imagine yourself for several days watching the young ocean divers on the beach carefully preparing the capsule for their next trip. They have fitted it out with food and with a number of scientific instruments. You have made friends with them and several of them have invited you to join them on their trip to see the wondrous sites of the deep sea.

You have accepted the invitation and you are intrigued, delighted and curious. Now imagine yourself and the deep sea explorers standing on the deck of the ship that will take you out to the sea. You are going out to sea now, you see the long, low swell of the sea and hear the waves rolling in on this calm sunny comfortably warm spring day. You can feel a light breeze on your face. Imagine yourself with two of the explorers who have descended deep into the ocean many times before, we are going into one of the capsules lying on the deck.

The portals are being screwed tight so that no water can penetrate, strong cranes swing out your capsule over the side of the ship and you can hear it splash and descend beneath the surface of the water. Notice the sudden shift from the gold and yellow light above the sea to a turquoise green all around you. You see the foam and bubbles from the splash. Look upwards, you see the strong steel cable from which your capsule is being lowered down close to the ship's side, now we are being lowered. Peer up, you can see the watery ceiling crinkling and slowly lifting and settling while here and there pinned to the ceiling are tufts of seaweed. Notice small dots moving just below the weed and you try successfully to focus a pair of binoculars that one of the explorers has handed to you on these moving dots. You have no trouble recognizing a flying fish trailing its half-spread wings as it swims. You can feel the capsule revolving slightly and the bottom of the ship's hull comes into view. It is encrusted with

corals and shells. Great streamers of plant and animal life float from it.

There is something unreal and at the same time rather amusing about a port view of a slowly rolling bottom of an unanchored boat. The people on the deck of the boat phone down to tell you that the sun keeps blazing over the ocean, the surface is unusually quiet and conditions are ideal for going down further. You are being lowered further, the green of the water fades as you go further down and at 200 feet it is impossible to say whether the water is greenish blue or bluish green.

You make your eyes focus in mid-water and see a lovely colony of jelly fish drift past. Gracefully floating in the deep water, they are beautiful. They sweep slowly along, alive and in constant motion. A bit lower a beautifully colored fish looks in on you, two deep-sea turtles go by, several silvery squid balance for a moment in front of your port hole then shoot past.

Now you can take control of how deep you go, which way your capsule turns, and what you see. There are the rich colors of a reef ... observe with interest the texture and colors as the fish gently swim between and around the reef.

Slowly, steadily, you guide your vessel ... then there are lobsters and some crabs. You are less and less concerned with the upper world, you feel restful, quiet and happy, removed from it while you plunge into new, interesting and predictably beautiful sites. Your attention is relaxed, very relaxed and you keep on going down as far as you like.

Some patients do not possess vivid imaginations. For these patients suggestions to imagine can prove quite frustrating, potentially leading to problems with compliance and discouragement. In these cases other deepening techniques can be employed which do not emphasize imaging ability, but instead invite absorption in internally generated sensation. Two of these are breathing and the kinesthetic sense of heaviness.

19.3.2.4. Somato-attentional deepening technique #1: breathing

Now that you are relaxed and deeply hypnotized, I would like you to be aware of your breathing for a moment. One way to go more deeply into hypnosis is to pay attention to your breathing for awhile.

Notice, as you breath slowly and normally, how good it feels to exhale ... inhale and exhale [the therapist may time the words 'inhale' and 'exhale' to the patient's actual breathing pattern] and as you continue to feel all these sensations the way your muscles move quite naturally and effortlessly to facilitate your slow and normal breathing, you become more and more relaxed with each passing breath. More and more hypnotized.

It's as though every time you exhale, you purge your body of the stress and tension of the day. Every time you exhale, while you are hypnotized, every time you exhale, without even thinking about it, you become more and more deeply and comfortably hypnotized as you wish.

Now I am going to count from 1 to 25 ... and, as I do, you will go more deeply and comfortably into hypnosis ... because every time you exhale, your body will become more and more limp and relaxed ... your mind will become more and more clear, and you will find yourself curious about how your mind and your body work together in this relaxed and interesting state [the therapist might choose to time the counts with the patient's breathing].

1. More and more relaxed, 2, 3, etc.

19.3.2.5. Somato-attentional deepening technique #2: progressive heaviness

As you remain deeply hypnotized you will notice that there is a warm numb feeling beginning to form all over your body. A comfortable feeling of heaviness and warmth spreading from the very, very top of your head down through your face, jaw, neck and shoulders ... becoming more and more limp and relaxed, all the muscles of your body, as this comfortable warmth, heaviness and relaxation move down through your neck and your arms and chest and stomach muscles, down through your whole body, more and more comfortably heavy. Muscles limp and relaxed, feel this warmth ... wonderful warmth, almost as though you were in a hot tub, so relaxed.

Now in a moment I am going to place my hands on your shoulders and this will allow you to go even more deeply into hypnosis, you will feel the heaviness coming over your entire body ... as I press down gently on your shoulders, you will go deeper into hypnosis, comfortable and relaxed. [Therapist places a hand on each of the patient's shoulders and very gently applies modest pressure].

19.3.3. Phase III: introductory suggestions

In the initial hypnosis experience it is useful to follow the induction and deepening procedures with three very simple suggestions which serve a 2-fold purpose. First, the patient gains further experience with the hypnosis, gauging if, and how, this state is different from their normal state of consciousness. Second, by noting the response to suggestions, the therapist makes a determination of the patient's general hypnotic ability which may be important in treatment planning. We offer three examples of relatively neutral suggestions which can serve the purpose of educating patient and therapist about how hypnosis is being experienced.

19.3.3.1. Arm lowering or levitation

Here the procedures are almost identical to the arm lowering and arm levitation inductions, but with the difference that they are dramatically shortened. For instance, an arm lowering suggestion might consist of:

Now that you are deeply hypnotized, I would like you to hold out your right hand up in the air, straight out in front of you, palm facing down. As I have been talking, perhaps you have noticed a feeling of tension in your hand or in your arm or maybe you have noticed a tingling sensation ... or a tendency for your fingers to twitch ever so slightly ... or you have noticed something I have not mentioned.... There may be a feeling of warmth or coolness in your hand or your arm, or in both. Now, I would like you to continue to pay very close attention to your arm because something interesting is about to happen to it. It is beginning to get heavy ... heavier, and as I continue to talk you can be aware that thinking about this heaviness creates a tendency for your arm to become heavy, very heavy and you will find that in a moment your right hand and arm will become so heavy ... like lead, so heavy that your hand and arm will gradually very slowly begin to move down more and more down. As it becomes heavier and heavier, like lead. I am going to count from 1 to 10 and the hand and arm will become increasingly heavy and move down more and more. 1 ... down ... 2 down more and more ... 3 ... down ... 4-5 down more and more ... 6 down, 7-8 down more and more ... like lead. 9-10 more and more down.

[allow about 10 s of silence, then note if hand and arm have moved, and how much].

This is a relatively easy item which about 75 percent of people pass to some extent. Of course if the hand and arm have reached the patient's lap or the side of the chair before the count of 10, the therapist simply says: 'that's fine, just relax, let your hand feel normal once again... as we move on to something else'. If the patient's hand and arm move very little, the therapist might say at the end of the procedure: 'you are doing fine, you felt the heaviness in your hand and arm...now you can put them back in their resting place and we will move on to something else'.

19.3.3.2. Hands together

Another relatively innocuous suggestion is the hands together item from the Stanford Hypnotic Susceptibility Scale: Form A.

Now what I would like you to do is hold both hands straight out in front of you, palms facing toward each other. That's right arms out in front of you, palms facing inward ... about a foot apart. [if the patient has difficulty with these instructions the therapist positions the hands accordingly]. Now, I would like you to imagine a very strong force attracting your hands together. And as you think of this force attracting you hands together, they begin to move together ... it is a powerful force, like powerful magnets or maybe very very thick rubber bands around your hands ... pulling and moving your hands closer and closer. Moving, more and more closely together, that's right ... moving ... moving ... closer and closer. The force is so powerful, that your hands begin to move more and more ... moving ... moving ... closer and closer [allow about 10 s of silence].

Here again, the procedure is terminated if the hands come together at some point: 'good, your hands have come together and are now touching ... now let the force dissipate'. If the patient fails to respond to the suggestion, gentle reassurance is given as above. About 65 percent of patients will respond positively to this procedure.

19.3.3.3. The hypnotic dream

Another item fashioned from the Stanford family of susceptibility scales is the hypnotic dream. This item has the advantage of probing for the patient's ability to regress more substantially

than the other items, but has the disadvantage of having an abreactive pull. Nevertheless, the item does merit inclusion for most patients.

As you continue to remain very deeply hypnotized, I am going to count from 1 to 5, and as I do you will become sleepier and sleepier ... and when I reach the count of '5' you will sleep and have a dream ... but a special and pleasant dream ... you will have a dream about what hypnosis means ... you will have a dream, just like you might have when you sleep, and it will be a dream about hypnosis. You may dream directly about hypnosis, or you may have a dream which does not seem outwardly to be about hypnosis, but may very well be. Now I am going to count from 1 to 5 and you will get sleepier and sleepier ... when I reach the count of '5' you will have a dream about hypnosis. After a while I will speak again to ask you about the dream that you had, and you will remember everything very clearly ... and you will be able to tell me all about it without it disturbing your relaxed state of hypnosis. Now, 1 ... more and more sleepy ... 2 ... sleepier and sleepier, you are going to have a dream about hypnosis ... 3 ... 4 ... 5 ... sleep and dream ... deep asleep. [therapist waits about a minute, noting any eye movements, or other bodily indications of private experience]... That's fine, deeply relaxed and hypnotized, but no longer dreaming ...tell me about your dream ... tell me all about it [therapist listens, asks open-ended question etc.]

19.3.4. Phase IV: abbreviated hypnotic inductions for subsequent sessions

A simple but exceedingly important therapeutic maneuver during the latter portion of the initial hypnotic session is to structure a constellation of cues that will enable the patient to enter hypnosis quickly and easily on subsequent sessions. It is entirely unnecessary to employ lengthy hypnotic inductions each time hypnosis is used in therapy. Indeed, after one or two sessions of using the full induction, there is normally no reason for the patient to take more than a minute to enter hypnosis

Normally instructions for rapid reinstatement of hypnosis are administered *during* the latter portion of the first or second hypnotic session. They are given in hypnosis as a post-hypnotic

suggestion. Here there is a premium on establishing salient cues (both verbal and nonverbal) which have become associated with being hypnotized. What follows is one example of such a procedure:

As you remain deeply hypnotized I will now help you to learn how to enter hypnosis easily and quickly. Whenever you are in this room, and in your chair, and whenever we want to use hypnosis in our work together, all you need do is to close your eyes and listen to me count from 1 to 5 ... and when we do this together you will find that by the count of '5' you will be as deeply relaxed and hypnotized as you are now ... perhaps even more so. When I reach the count of '5' you will be deeply relaxed, finding yourself walking down the spiral staircase that you liked so much today. Whenever we are in this room together, and we wish to use hypnosis in our work together, all you need do is close your eyes and listen comfortably to me count from 1 to 5. And by the time I reach the count of '5' you will be deeply relaxed and hypnotized ... walking down that very special spiral staircase.

When hypnosis is terminated, and after the post-hypnotic interview, the therapist and patient might 'practice' this abbreviated counting procedure. A second termination then follows. In the next session when hypnosis is used, the patient and therapist can repeat the procedure. Sometimes it is helpful to follow the abbreviated induction with a brief and familiar deepening technique. In any event, subsequent induction of experienced hypnotic subjects need take no longer than 1 or 2 min.

19.3.5. Phase V: termination of hypnosis

The termination of hypnosis is very straightforward. For patients who have never before experienced hypnosis, the therapist simply states:

In a little while I am going to count backwards from 10 to 1. And as I do you will become less and less hypnotized. When I reach the count of '1' your eyes will open and you will be fully awake and alert, in your normal state of awareness. When I reach the count of '1' you will be fully awake, and you will feel refreshed and relaxed, remembering everything you wish to remember. That's right, now I will begin to count backwards from 10 to 1, and you will become more and more awake and alert, and when I reach the

count of '1' you will be fully alert. 10, 9 ... less and less hypnotized ... 8, 7 ... less hypnotized, more awake ... 6, 5, 4 ... more and more awake ... 3, 2, 1 ... EYES OPEN, WIDE AWAKE ... Are you awake? [the therapist then proceeds with the post-hypnotic interview].

For subsequent sessions in which hypnosis is used, the patient can be instructed: 'Soon you will be ready to come out of hypnosis ... when you are ready, take a deep breath in, open your eyes and you will be wide awake [patient opens eyes]. That's it, wide awake'.

That termination of hypnosis is an emotionally charged event is evidenced by the widespread, but completely inaccurate, belief that patients can 'get stuck' in hypnosis. Patients are no more likely to 'get stuck' in hypnosis than they are to 'get stuck' in a traditional, intensive nonhypnotic therapy session. In both instances themes of separation and loss can make termination evocative. Sometimes hypnosis patients enjoy their experience so much that they are reluctant to 'come out' of hypnosis because it is so pleasant. On the *exceedingly* rare occasion when a hypnosis subject does not easily come 'out' of hypnosis, the therapist can simply note: 'I notice that you have chosen to remain in hypnosis for awhile ... tell me what is happening...'. In my experience, the mere act of asking for information provides the solution. Sometimes patients claim to have not heard the termination instructions; sometimes they are so wonderfully relaxed that they do not want to interrupt the experience; sometimes there is something they wish to share with the therapist before hypnosis ends; sometimes they are in fact asleep. Attention to any unfinished material along with gentle and reassuringly direct suggestion for termination will suffice. It may be helpful for therapists to keep in mind that in research where the hypnotist willfully and abruptly left the room while the subject was still hypnotized, subjects were found to arouse themselves gradually and spontaneously from the hypnotic state, no worse for wear (Evans, 1966; Orne and Evans, 1966).

19.3.6. Phase VI: the post-hypnotic interview

It is helpful, especially in the initial hypnosis session, to allow 5 or 10 min to discuss the

patient's experience of hypnosis. While the therapist has had an opportunity to observe the patient's behavioral response to hypnosis, it is important to assess the patient's subjective experience, and the patient's attitude about that experience. As in any such semi-structured interview, the therapist begins with open-ended, neutral questions, and then moves through a series of increasingly specific queries regarding the patient's experience. The therapist may begin with 'What was that like?' 'What else did you experience?' 'What was it like being hypnotized?'. Then moves to questions regarding the patient's general phenomenological experience: 'How deeply hypnotized did you feel?' 'How did you experience my voice?' 'How did time seem to go by?' 'Did you feel hypnotized more deeply at some times than at others?' 'How did your body feel during hypnosis?' Another series of questions addresses responses to specific suggestions. Here the therapist can listen for evidence of topographic regression, especially nonconscious involvement: 'What was the staircase like?' 'What was it like for your arm to move down and get heavy?' 'What was it like when your hands moved together as they did?'. The therapist can assess whether movement seemed to 'happen by itself' or whether there was a more conscious participation ('I helped it along quite a bit'). The therapist can probe for the vividness of imagery and richness of fantasy: 'What was the dream like?' 'Was it like a real dream?' Finally the therapist can invite a frank discussion of technique: 'Tell me, was there anything I did that helped you go more deeply into hypnosis, or anything I did that seem to get in the way?'

Typically patients will be quite forthcoming about their experience, diminishing the need for formal questioning. Further, patients can be expected to be understandably curious about what the therapist thinks of their response and what that means about subsequent treatment. As we will discuss later, there are times when the patient's response is so problematic, or their hypnotic ability is so very limited, that nonhypnotic interventions are indicated. If this is the case, the therapist should discuss this with the patient in a way that avoids implying failure or poor prognosis. But since most patients will be moderately to highly hypnotizable and, since for some problems even low hypnotizables benefit

from hypnotic intervention, the therapist can be justifiably encouraging about the patient's performance. In short, the post-hypnosis interview is a time for the patient to de-brief the therapist on how he/she experienced hypnosis. The information derived from this interview period is easily as valuable as any information the therapist gleans from the hypnosis phases proper. Similarly, the therapist informs the patient about treatment implications of this initial hypnotic experience, and in so doing underscores the joint nature of the therapeutic enterprise.

19.4. Instruction on self-hypnosis

In the course of supportive hypnotherapy with an aim of symptom alleviation, it is often quite essential for the therapist to teach the patient how to perform self-hypnosis, so that coping techniques developed in the consulting room can be transferred to the patient's day-to-day life. Of course, patients should not be encouraged to use self-hypnosis for uncovering or expressive purposes, but only for self-soothing and symptom containment. Instructing patients on how to do self-hypnosis is straightforward. Assuming the therapist has introduced the patient to the role of self-hypnosis in the treatment plan, the topic is addressed during a subsequent hypnosis session. When the patient is sufficiently hypnotized, and the supportive effect is obtained, the therapist may directly instruct the patient as follows (this example is taken from a pain patient):

Now that you are deeply relaxed and hypnotized, once again on your tranquil beach where no discomfort of any sort can reach you, listen to my words carefully. Whenever you wish to go into hypnosis, whenever you wish to take control of the sensations you have in this way, all you need to do is to find a reasonably comfortable place to be, shut your eyes, and count slowly to yourself from 1 to 5. As you count you will note that your breathing changes, the way your body feels changes, and you become transported once again onto this wonderful beach. So that by the time you reach the count of '5' you will always be deeply hypnotized, and in the wonderfully relaxed state you are now in. You may find that you actually go even more completely and deeply into hypnosis with practice.

Whenever you wish to go into hypnosis, all you need do is find a comfortable place, close your eyes, and count silently to yourself from 1 to 5. You will find that your mind and body are effortlessly transformed back into this peaceful state of hypnosis. A state in which you have a different kind of control over your sensations. At the count of '5' you will always be right there on the beach, calm, tranquil, free of all discomfort. Once you are thus hypnotized, once you are once again at the beach, you can stay for as long as you like. You need only stay there one or two minutes to obtain the benefit of hypnosis, or you may choose to stay longer. But whenever you wish to bring yourself out of self-hypnosis, all you need to do is take a deep breath in, and open your eyes, and you will be wide awake ... refreshed ... alert and ... completely comfortable. You can be surprised how far this refreshed, comfortable, and alert feeling will extend in the remainder of the day. You will practice self-hypnosis in this way at least twice a day. For now, just remain hypnotized, as you listen to my voice.

[Therapist repeats the general instructions of the second paragraph]

Now, in a little while you will come out of hypnosis. Soon you will take a deep breath ... open your eyes ... and you will be wide awake. You will remember everything we did today. You will find you are especially clear on how to do self-hypnosis. After you have a chance to talk a bit about your experience today I will ask you to practice self-hypnosis right here in the office.

After termination of the hypnosis, the patient and therapist discuss the work of the day. The therapist then reminds the patient of the self-hypnosis instructions, and asks the patient to practice hypnosis in the consulting room: 'Now what I would like you to do is to go ahead and use self-hypnosis right now with me here. [Therapist reminds patient of instructions]. When you are there on the island, comfortably hypnotized, just say the word 'Now', so that I know you are there. When you do, I will speak to you, and help you go even more deeply into hypnosis. Now I will be quiet for a while ... go ahead and go into hypnosis ... just say 'Now' when you are on the island.'

When the patient signals that he/she is hypnotized, the therapist probes for the patient's experience, and repeats by now familiar phrases

associated with increased depth and/or symptom alleviation. It is once again suggested that the patient will employ self-hypnosis at least twice a day, more if needed. The sessions need be no more than 1 or 2 min each, but they can be longer if the patient so wishes. The patient is then asked to come out of hypnosis as he/she would when doing self-hypnosis alone. The therapist then queries the patient about the self-hypnosis experience, again reiterating the instruction to practice self-hypnosis at least twice a day. The first order of business on the subsequent session is to discuss how the patient found self-hypnosis to be.

For the most part, patients who respond well to traditional heterohypnosis respond well to self-hypnosis. Patients who struggle with conflicts around autonomy will sometimes actually report that they go deeper into hypnosis when they do it alone. On the other hand, strikingly dependent patients may resist self-hypnosis initially, but this is rarely unmanageable. There is of course utterly nothing special about any of the specifics contained in the above example: providing a cue is helpful, but whether it is counting, a subtle motor gesture or some particular word is not important. Instructions on practice are probably important, but the specifics are less so. Two authoritative texts on self-hypnosis are: Fromm and Kahn (1990) and Fromm *et al.* (1981).

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CHAPTER 20

Hypnosis in the relief of pain and pain disorders

Mark P. Jensen and David R. Patterson

20.1. The problem of unrelieved acute and chronic pain

Acute pain refers to pain associated with tissue damage, or that is experienced with noxious stimulation that would produce tissue damage if it continued. Examples include minor injuries that quickly resolve, such as paper cuts or stubbed toes. More serious examples of acute pain include pain associated with diagnostic procedures and medical treatments that themselves produce tissue damage, such as lumbar punctures or bone marrow aspirations. During lumbar punctures, a needle is inserted into the spinal canal between vertebrae to obtain spinal fluid, and during bone marrow aspirations, a needle is inserted directly into bone (often the pelvic bone), to suction out bone marrow. Both of these diagnostic procedures produce significant pain and anxiety in many patients that is only minimally helped by biomedical interventions.

In addition to painful diagnostic procedures, there are a host of invasive medical interventions that can result in severe acute pain. These include the hundreds of thousands of minor and major surgeries performed every year. Other examples include burn wound debridement, childbirth and that pain associated with dental care. Although opioid analgesics and

brief anesthetic procedures (e.g. nitrous oxide) can reduce the acute pain associated with some procedures, they seldom control all pain, have little efficacy for some patients and can be costly and dangerous (Patterson and Sharar, 2001).

Unlike acute pain, which usually resolves once healing is complete, chronic pain, by definition, remains or worsens over months and years. It is often precipitated by trauma, such as a motor vehicle accident or fall, but can also result from an ongoing disease process (e.g. arthritis, cancer, sickle cell disease). Other sources of chronic pain include severe headaches, back problems or disabilities (e.g. amputations, spinal cord or traumatic brain injury, multiple sclerosis, neuromuscular diseases such as muscular dystrophy, and cerebral palsy). There are also a number of specific chronic conditions that have moderate to severe pain as a primary symptom (e.g. complex regional pain syndrome, previously known as reflex sympathetic dystrophy, diabetic neuropathy, post-herpetic neuralgia). For many people with these chronic pain conditions, the experience of severe disabling pain is a central, if not the single most important, feature of their lives.

Biomedically focused interventions for chronic pain such as nerve blocks, surgeries or medications, some of which themselves can put

patients at risk for more pain or uncomfortable side effects, are often the first and sometimes only treatments offered to patients with chronic pain. Unfortunately, by their very nature, chronic pain problems tend to be refractory to biomedical interventions, leaving patients who are offered only biomedical pain treatments little recourse for managing pain once these treatments fail or produce only limited pain relief. As a result, there remain millions of individuals who suffer from severe unrelieved chronic pain (Jacobson and Mariano, 2001).

Hypnotic treatments are among a number of nonbiomedically focused treatments [others include cognitive-behavioral therapy, operant treatment, motivational enhancement therapies, biofeedback, graded exposure therapy, group therapy and family therapy, as well as some relatively new approaches such as acceptance-based therapy (McCracken *et al.*, 2005) and Motivational Interviewing (Jensen, 2002)] that have been shown to result in significant reductions in pain and improvement in overall quality of life in persons with acute and chronic pain (Turk and Gatchel, 2002). Although more research is needed to identify the rates of positive response and the effective components of hypnotic analgesic interventions, enough controlled trials have been performed to conclude that hypnosis is effective for a large number of acute and chronic pain conditions (Montgomery *et al.*, 2000; Patterson and Jensen, 2003). As such, we believe that hypnosis should be a treatment option offered to any patient suffering from pain.

This chapter is written for the clinician who is interested in helping patients better manage acute or chronic pain with hypnosis. It begins with an overview of pain, and presents the essential components of modern biopsychosocial models of pain; models that we believe should be clearly understood by health care professionals who work with patients with pain. This is then followed by a discussion of strategies that can be used to assess and treat acute and chronic pain, and how hypnosis can be integrated into the treatment plans. Because the key issues important to the management of acute and chronic pain differ, we present the strategies for assessing and treating patients with each pain type separately.

20.2. Understanding pain

20.2.1. The Gate Control Theory and the development of biopsychosocial pain models

Traditionally, and perhaps as recently as the late 1960s, pain was viewed by many health care providers primarily from a biomedical perspective. On the basis of a simple biomedical model, the severity of pain was thought to be directly related to the amount of tissue damage or injury; more tissue damage should result in more pain, and more pain should be indicative of more tissue damage. Patients who presented with significant pain in the absence of clear signs of tissue damage were viewed as suspect. They were often thought either to be malingering or to have significant psychopathology that was being expressed using the language of pain and suffering. Such patients were told indirectly, and sometimes even directly, that they were imagining or exaggerating their pain experience, and did not need to take the pain seriously. They might have been told that ‘nothing can be done’ and that they must ‘learn to live with’ their pain.¹ Such patients would often seek repeated medical consultations. Some even ended up undergoing repeated invasive medical interventions (surgeries, spinal blocks) that provided at best only temporary relief and, at worst, produced significant tissue damage that contributed to the overall pain problem.

The publication of the Gate Control Theory of pain in the 1960s (Melzack and Wall, 1965) marked a significant turning point in the understanding of pain. This model pointed out what many clinicians observe every day; that patients who are neither exaggerating nor have significant psychopathology can experience severe pain in the absence of identifiable tissue damage, and that this pain can persist for months, years and decades long after tissue healing occurs. The model described how pain can be modulated at the level of the spinal cord (specifically, in the dorsal horn of the spinal cord,

¹ Indeed, if one views pain from a purely biomedical perspective, nothing more could be done for such patients, and acceptance of pain was the only option left.

where the axons of sensory neurons from the periphery enter the spine). This modulation was hypothesized to be influenced by ‘ascending’ (towards the brain from the periphery) activity from peripheral nerves, as well as by ‘descending’ (down to the spinal column from the brain) activity from the brain.

Ascending influences on pain experience include the effects of stimulation of nerve fibers by massage or by movement. For example, most people are aware that when they rub or shake a body area that has recently been injured, their experience of pain decreases. An example of a descending influence would be the effects of anxiety or the meaning given to the sensory information transmitted to the brain, which can then ‘open’ or ‘close’ the gate through descending fibers, and subsequently influence the amount of painful signals that enter the central nervous system for processing. The Gate Control Theory provided a compelling and specific physiological model for how pain can be influenced by both biological and psychological factors, inspired a profound increase in pain research (Cervero, 2005) and increased acceptance for the development of more complex biopsychosocial models of pain (Novy *et al.*, 1995).

20.2.2. Biopsychosocial models

Biopsychosocial models of pain acknowledge that biological components and mechanisms can play a significant role in the perception of pain. However, these models also posit an important role for psychological and social factors on pain intensity, overall suffering and the effects of pain on day-to-day life. Clinically, the model emphasizes that all three (biological, psychological and social) factors should be considered when evaluating pain and developing effective treatment plans. As we will discuss, hypnosis can play a positive role in most of these treatment plans.

The complex biological factors that contribute to pain vary significantly between patients and their conditions, and are only now beginning to be better understood. They include, but by no means are limited to, the amount of ongoing inflammation in the areas associated with pain (in general, more inflammation means more pain), the relative strength and mobility of the

muscles and tendons in the areas associated with pain (in general, muscles and tendons that are stronger and better stretched hurt less), the amount and nature of any ongoing nerve damage (patients with nerves that are being compressed, that have been damaged or that are deteriorating due to genetic neuromuscular conditions tend to report more pain) or even the amount and nature of immune cell activity in the spinal cord [recent evidence suggests that immune cell activity in the spinal cord can increase pain sensitivity (Wieseler-Frank *et al.*, 2005)]. The extent to which any patient’s pain experience is related to any one or more of these factors, and the development of an appropriate biomedical treatment plan, requires a thorough evaluation from a trained pain physician. Appropriate biomedical treatments might include medication management (often discontinuing or decreasing medications, but sometimes also initiating or increasing others), graded reactivation or exercise and, for some pain problems, specific invasive procedures.

One important decision that should result from a medical evaluation of a pain problem is the extent to which neuropathic (factors associated with nerve damage or irritation) or nociceptive (factors associated with the transmission of pain messages along otherwise healthy nerve fibers, often due to musculoskeletal problems) are contributing to a patient’s pain. As a rule, many neuropathic problems do not tend to respond well to physical exercise and reactivation.² Recommendations for first-line interventions for most neuropathic pain problems usually include trials of appropriate medications [e.g. anti-seizure medications such as gabapentin or pregabalin, or tricyclic antidepressants (Dworkin *et al.*, 2003)] with a primary goal of reducing the intensity and unpleasantness of pain. Because of its proven efficacy (cf. Patterson and Jensen, 2003), we believe that hypnosis for pain reduction should be added to the list of first-line treatments offered to patients with neuropathic pain.

² One important exception to this is complex regional pain syndrome, for which appropriately structured movement and activity of the affected limb, while painful in the short run, can provide important benefits in the long run.

The suggestions that medication management and self-hypnosis training be considered first-line treatments for neuropathic pain, and the fact that such pain often has a clear biomedical cause, do not mean that psychosocial factors do not impact the severity and impact of neuropathic pain; in fact, evidence suggests just the opposite (e.g. Haythornthwaite and Benrud-Larson, 2000; Hanley *et al.*, 2004). However, the reduction of perceived pain intensity and associated suffering remains appropriate as a primary treatment goal that should be strongly considered in persons with severe neuropathic pain.

Patients with a nociceptive source of their pain, especially when this pain appears to be related to a history of trauma to muscles and tendons, tend to have more variable treatment outcome goals, depending on the patient's particular situation. For patients with such pain problems, the prognosis is good for improvements in pain and functioning, as long as the patient is willing and ready to make the significant personal efforts required for adaptive pain management. For musculoskeletal pain problems, in particular, what the patient does (e.g. avoidance of inactivity, maintaining a moderately active lifestyle, practicing self-hypnosis for pain management) is much more important than what is done to them; invasive medical procedures tend to provide little long-term benefit, and can even make things worse for such patients.

Psychological factors that impact pain and its effects on function in persons with chronic pain include such variables as beliefs and attributions about the pain (including its specific meaning to the patient), coping strategies used to manage pain, and psychosocial history (e.g. learning, developmental and abuse history). Social factors include such variables as overall level of social support available to the patient, how the important people in the patient's life respond to the patient when he or she communicates pain (via 'pain behaviors', such as groaning, limping, etc.), and the patient's work (or lack of work) environment.

A great deal of research now supports the utility of biopsychosocial models of pain. Such research findings often include significant associations between biological variables and pain, but usually even stronger associations between psychological and social variables and

measures of pain severity and patient functioning. Evidence that treatments designed to have an impact on biological (e.g. medications, rehabilitation and exercise programs), psychological (self-hypnosis training, cognitive restructuring) and social (e.g. treatments that alter social contingencies of pain behaviors) components all influence pain and adjustment provides even stronger support for these models.

The primary clinical implication of modern biopsychosocial models of pain is that the treatment of pain requires a thorough understanding of the biological, psychological and social factors that may be contributing to an individual patient's pain and suffering before a treatment plan is developed. The goals of treatment, and the patient's readiness to participate in treatment, will have a profound impact on whether hypnosis should even be offered, and, if offered, on the specific suggestions that should be used during hypnosis. In the sections that follow, we discuss the strategies we use to evaluate patients with acute and chronic pain, and how these can be used to design a treatment plan that uses hypnosis. We then follow each section with case reports that provide examples of how we have applied the approaches in real patients.

20.3. Acute pain

20.3.1. Evaluation of the patient with acute pain

When performing the initial psychosocial and medical history of the patient with acute pain, the evaluating clinician should determine if the patient has a history of psychological issues that might influence his or her ability to cope with pain. For example, because anxiety has a cyclical relationship with acute pain, and patients with depression may show withdrawal and other maladaptive coping behaviors, the clinician should determine the presence and extent of any anxiety and depression symptoms. It is also useful to assess whether the patient has had any previous episodes of acute pain or trauma, and, if so, how they reacted to these. The manner in which patients have coped with acute pain in the past is a strong predictor of how they will respond to future similar events, and obtaining such information can be very helpful when developing a treatment plan.

One important domain to assess when evaluating the patient's coping style is the extent to which he or she responds to threatening medical procedures by *avoidance* or by *sensitizing*. Patients who use avoidance will typically cope by minimizing the amount of information they seek and gather about the medical procedure, and make efforts to shift attention away from a procedure (Patterson, 1992). They tend to do well with interventions that encourage distraction, imagery and/or dissociation. For these patients, hypnosis that includes suggestions for dissociation (see Appendix) can be particularly helpful. On the other hand, patients who sensitize tend to request a great deal of information about a procedure, and tend not to do well with coping strategies that encourage them to withdraw their attention from the procedure (Everett *et al.*, 1990). Such patients will often remain hypervigilant, and want to know exactly what is going on during the procedure. These patients tend to benefit more from strategies that focus their attention on the intervention rather than away from it. They might be told, for instance, that by focusing on sensations that they experience, they will be more able to change (and therefore control) them.

In some instances, the patient will already be experiencing acute pain at the time of evaluation. In this situation, it is obviously important to assess the intensity and bothersomeness of this pain if possible. In fact, by asking patients to rate both (we use 0–10 scales, with 0 = 'No pain' or 'Not bothersome' and 10 = 'As much pain ...' or 'As bothersome as you can imagine'), and explaining the difference between the two, the clinician can begin to help the patient separate these two aspects of the pain experience; a skill that may prove useful for patients who are able to reduce one of these aspects of pain more than the other using hypnosis.

The clinician should also assess how well the patient is able to respond and concentrate. Patients experiencing intense pain may not be able to hold a conversation long enough for hypnosis to be introduced. Hypnosis can be of particular use when the patient is in a crisis state, but the magnitude of the pain and the threat to the patient should be determined as a first step.

Whether the acute pain is anticipated because of an upcoming medical event, or is a current

problem, it is often important to treat anxiety with both hypnosis and nonhypnotic (e.g. anxiolytic drugs, cognitive-behavioral approaches) strategies. For some patients, particularly children, anticipatory anxiety may be a more serious issue than the pain itself. Also, it is important to remember that some patients may not recognize or acknowledge that they are anxious, so careful observation of the patient (e.g. for avoidance behavior, physiological indications of anxiety such as perspiration or increased heart rate when discussing the medical procedure, sleep difficulties) is necessary when evaluating the presence and severity of anxiety.

There are a number of environmental and logistical factors associated with medical procedures that influence how painful and threatening the patient finds them. For example, it is well known in the pediatric literature that the patient's room should be regarded as a 'safe' place, and medical procedures should not be performed there; it would also make sense to extend this approach with adult patients whenever possible. Also, people experience less pain and anxiety when they feel as if they have some control over the procedures. The presence of a supportive person (spouse or parent) can reduce pain and suffering further, particularly if they act as calm role models (McGrath *et al.*, 1994).

For children, restructuring medical procedures so that the child sees them as a game can also be of great benefit. For example, a child may be unwilling to walk on injured legs but might be willing to do so (or even run) if the therapy or activity is presented as a game. The specific questions that assess the factors discussed above that we have found particularly helpful during the evaluation of a patient for acute pain management, are listed in Table 20.1.

20.3.2. Acute pain treatment plan development

Table 20.2 lists the primary treatment targets of patients who have experienced, or who are scheduled to experience, significant acute pain. It is important to keep in mind, as a first consideration, that the pain associated with many medical procedures can be severe. Although this chapter focuses on hypnosis, we wish to emphasize that

Table 20.1 Questions to ask during an acute pain evaluation, and the problems/issues these can be used

| Question | Responses can be used to evaluate... |
|--|--|
| On a scale of 0 to 10, with 0 being 'No pain' and 10 being 'The most intense pain you can imagine,' how would you rate your pain intensity [now/with the procedure]? | Current (or predicted) pain intensity associated with the procedure |
| On a scale of 0 to 10, with 0 being 'Not at all unpleasant or bothersome' and 10 being 'The most intense unpleasant and bothersome pain you can imagine', how would you rate the unpleasantness or bothersomeness of your pain [now/with the procedure]? | Current (or predicted) pain unpleasantness/bothersomeness |
| Are you generally more an anxious person or relaxed person? Have you been diagnosed with an anxiety or nervous disorder? Do you find that you worry a lot? | Trait anxiety |
| In the past 2 weeks, on how many days would you say you felt sad or blue more of the day? What has really brought you pleasure in the past couple of weeks? Have you had a big change in your weight in the past month? Have you noticed any problems with your appetite? Any problems with sleep? On how many days in the past 2 weeks did you feel tired most of the day? Do you feel that you are worthless or no good? Have you noticed problems with your memory or ability to concentrate? Have you had thoughts of your own death recently? | Symptoms of depression |
| Once you are in bed and ready to go to sleep, how long does it usually take you to get to sleep? About how many times a night do you wake up, on average, and how long does it usually take you to get back to sleep when you do wake up? What time do you usually wake up in the morning? Do you usually feel rested when you wake up in the morning? | Sleep problems, including sleep onset latency, nocturnal awakenings, early morning awakening and extent of restful sleep |
| As you think about the upcoming procedure, do you want a lot of information about it, or would you rather just ignore it and think about something else? | Avoidance versus sensitizing style |
| As you think about the upcoming procedure, how would you rate your anxiety about it on a 0 to 10 scale, with 0 being 'Not at all anxious' and 10 being 'The most intense anxiety I could ever imagine'? | State anxiety |
| What treatments have you ever had for pain associated with medical procedures in the past? How have these worked for you? | History of use and efficacy of procedural pain treatments |

analgesics should almost always be considered as a first-line treatment for acute pain management. Morphine and its derivatives are often very effective and safe for treating acute pain. Concerns about patient addiction when such medications are given to treat acute pain are largely unwarranted, and usually reflect irrational

concerns from health professionals (Melzack, 1990). Combining opioid analgesics with anxiolytic medications such as benzodiazepines (e.g. lorazepam, diazepam) has been shown to reduce pain ratings (Patterson *et al.* 1997). Anesthetic agents, such as ketamine, propofol or nitrous oxide, can also be of great value,

Table 20.2 Specific problems or issues associated with acute pain, treatment options and hypnotic suggestions that can be of benefit

| Problem/issue | Treatment options | Hypnotic suggestions for |
|---|--|--|
| High pain intensity and/or bothersomeness | Pharmacological analgesia/anesthesia, decreasing adversity of procedures, hypnosis | Relaxation, comfort, amnesia (for pain and for procedure), dissociation (from pain), time distortion, pain displacement, alter quality of pain sensations, decreased pain, distraction, can use environmental cues for responding to post-hypnotic suggestions |
| High trait or state anxiety | Education, pre-procedure anxiolytics, change the environment to make it more calming or interesting to the patients, humor, hypnosis | Decreased fear, competence of clinicians performing the procedure(s), age regression, age progression, calming (e.g. 'safe place' imagery) |
| Sleep disturbance | Sleep hygiene training, pharmacological intervention, hypnosis | Improved ability to fall asleep, deep and restful sleep, feeling rested upon awakening, imagery (e.g. 'safe place') while drifting off to sleep |
| Perceived loss of control | Provide choices, hypnosis | Increased sense of control over pain intensity and bothersomeness |
| Hypervigilant/sensitizing reaction | Fast-acting pharmacologicals, fast-acting hypnotic inductions (e.g. focus on breathing, followed by suggestions for relaxation) | Relaxation, monitoring and changing sensations |

although such agents almost always require supervision from an anesthesiologist (Patterson and Sharar, 2001).

As discussed above, it is also often possible to reduce the unpleasantness of a medical procedure by changing the environment or the how the procedure is conducted. For example, entering an MRI (magnetic resonance imaging) chamber can be a terrifying experience for a child, even when no pain is involved. Some creative clinicians have created jungle scenes in which the MRI chamber is presented as a cave in the middle of the jungle. Another source of potential adversity is the treatment itself. For example, health care workers may use caustic agents during wound care that sting during application. It is possible there are alternative agents available that do not cause as much pain, and that the treatment team has simply not considered this.

Acute procedural pain reduction can also often be accomplished with hypnosis. A primary reason for this is that it is almost always known

when and where a medical procedure will occur; this allows the clinician working with hypnosis to provide inductions and suggestions ahead of time. A particularly useful paradigm is to use hypnosis prior to a procedure, and provide post-hypnotic suggestions geared specifically towards the procedure. For a lumbar puncture, for example, patients can be told that, 'Whenever you feel yourself rolling on your side and you feel your back being prepared for the procedure, this will be a signal for you to experience a rush of comfort and relaxation, even more and deeper than you are feeling right now. You can feel yourself go limp... knowing that the time of the procedure will feel like no time at all, because you are paying attention to how limp and relaxed you are'. It is important that the post-hypnotic cues are geared specifically towards events that will occur during the procedure. For example, it would not be advisable that a hospital bed will become a cue for patients to become relaxed when the procedure might occur in a chair.

It is also useful to include earlier triggers for comfort and relaxation. For example, if it is known that the procedure will occur in a clinic, the patient can be told, 'Whenever you enter the front door of the clinic, a surprising sense of peacefulness and well-being will overcome you. You will also experience a growing sensation of comfort that will continue to grow as long as you remain in the building'. In addition, the clinician can perform hypnosis at the time of the procedure to strengthen the post-hypnotic suggestion. If it is possible for the clinician to be with the patient during the procedure, he or she could perform a brief (e.g. 5-min) induction immediately prior to the procedure, to supplement a longer induction that may have been performed at an earlier time. If the clinician cannot be present, it is sometimes possible to cue a treating professional to perform elements of the induction and to reinforce the suggestions. Such elements can also be part of the post-hypnotic suggestions given earlier. As an example, the patient may be told, 'Whenever you hear the nurse instruct you to count from 1 to 10 to relax yourself, you will find that you are able to reach an even deeper state of relaxation more quickly than you have right now'. Post-hypnotic suggestions for relaxation and analgesia can be convenient, as they do not require the clinician to be present during the procedure. However, hypnotic suggestions will almost certainly be more effective if they are reinforced by the presence of the clinician at the time of the procedure, and this should be considered whenever feasible.

There are a number of suggestions for pain reduction available to the clinician. One of the most extensive and creative sets of suggestions for pain control came from Erickson's writings (e.g. Erickson *et al.*, 1976; Erickson, 1980; Erickson and Rossi, 1981). Suggestions for *amnesia* are particularly useful for procedures. For example, patients might be told that they will '...be surprised at how quickly childbirth passes ... 20 minutes will go by as if only one minute is passed ... or you may not remember the process of labor at all'. The patient might be told that they will *dissociate* to a different place ('You may find yourself floating out of your body during the procedure') or time ('It will be as if you were in high school again, dancing at your senior prom'). Pain can be *displaced* to a less

threatening area of the body, or the patient can be encouraged to *alter their sensation* ('While you might feel a sense of pressure in that area of your body, it will not be a particularly uncomfortable sensation').

The best treatment for pain-related anxiety is for the patient not to experience pain in the first place. Once patients experience severe procedural pain, if they are required to undergo additional procedures, it is likely that anticipatory anxiety will intensify their suffering. Thus, aggressive pain management protocols that include both medication management and hypnosis should be instituted to minimize pain and discomfort whenever possible and practical. However, it is not always possible to ensure no pain, and some patients will show anxiety about a procedure even if they have no history of poor pain control. Education about the procedure can be useful, especially among sensitizers, for altering any unrealistic ideas or unreasonable concerns, and therefore reducing anxiety (Everett *et al.*, 1990). Patients can also be medicated with anti-anxiety agents such as benzodiazepines (e.g. lorazepam, diazepam) either before or after their procedure (as mentioned before, these medications also appear to have an analgesic effect when administered with pain medication). Such medications can serve to disrupt the link between anxiety and pain that is experienced by many patients. Some anti-anxiety agents, particularly midazolam, can create amnesia for the procedure, and thus have analgesic effects that are similar to amnesia hypnotic suggestions.

When thinking about the treatment of anxiety that is associated with acute pain, it can be difficult to distinguish where anxiety ends and pain begins; the two are often inextricably intertwined. Fortunately, typical suggestions for acute pain control can address both pain and anxiety. For example, telling patients they will 'feel more comfortable' during a procedure addresses both elements of pain and anxiety, as do suggestions for relaxation. However, a number of suggestions are particularly useful for anxiety. For example, patients can be told that they have 'nothing to fear' and are 'in safe hands.' Suggestions to frame the sights and sounds that the clinician knows will be associated with the procedure (e.g. a sterile room, the

beeping heart monitor) as indications of safety and of the care of knowledgeable staff can also effectively reduce anxiety.

Another particularly useful hypnotic approach that addresses both pain and anxiety is to suggest to patients that they imagine a time in the future when they are healthy, comfortable and healed (age progression). Finger signaling might be used to ensure that they have a clear positive image ('At the time you are able to have a clear image of yourself sometime soon where you are healthy, carefree and feeling very, very good, your mind will let you know by allowing this finger to pull up in the air, seemingly on its own power'). The patient can then be given the suggestion that '...the time between now and that very positive time in the future will seem to go by quickly and effortlessly'. The clinician can also add a dimension of age regression to a pain-free time in the past to help the patient gain a clear image of well-being, if needed. A link between the image in the past and that of the future can then be established with other suggestions.

Patients may experience a loss of control during medical procedures that exacerbates both pain and anxiety. There are a variety of measures that can be taken to allow the patients to feel more in control of the procedure. In burn wound care, patients can be encouraged to take part in the procedure and to clean some of their own wounds if they find that to be of help (Kavanagh, 1983). Another strategy for increasing control over the procedures that we have used with children is the use of 'time out' cards. Children are able to use a limited number of these cards to 'buy' breaks from wound care. Some procedures such as dentistry preclude patient involvement, but even with dentistry patients can be given choices about anesthesia or the type of drill used in order to increase their perceived control.

Some patients will demonstrate a hypervigilant response to a procedure because of anxiety or their general coping style. These patients want to know everything that is going on during the procedure while it is happening. Although this is not necessarily a problem in itself, it can potentially interfere with hypnotic approaches that involve dissociation and mentally removing one's self from a procedure. Before using hypnosis

for a burn procedure, we like to ask the patient, 'Are you willing to shut your eyes and totally remove yourself from the situation? Are you able to trust that the nurses are not going to do anything to harm you or make your injury worse?' If patients are unable to say 'yes' in response to these questions, some education about the safety of the wound care may be helpful. However, some patients will still refuse to give up monitoring the procedure under any circumstances. With such patients it is often more useful to go with their coping style and not seek to remove their attention from the procedure. These patients can be encouraged, for example, to pay attention to the procedure in great detail and be encouraged to monitor the sensations to '...see how the sensations change, becoming easier ... more friendly...'

Poor sleep often accompanies both acute and chronic pain. The standard interventions for sleep problems apply to patients in acute pain, and are reviewed in detail in Jaffe and Patterson (2004). Sleep hygiene measures can be highly effective, and are discussed in more detail in Section 20.4. Also, for patients in acute pain (but not for chronic pain, see below), mixed agonist-antagonist receptor benzodiazepines can be of use (zopiclone, zolpidem); alternatively, antidepressants such as trazodone can be useful for patients who are depressed or for whom other sleep agents are ineffective or contraindicated. Hypnosis will not interfere with such interventions, and can be used directly as a means to suggest improved sleep, or indirectly as a means to reduce pain and anxiety that might be interfering with sleep.

There are many instances in which a patient is experiencing acute pain that requires immediate intervention. One example is a trauma patient that has just been injured, or a patient that underwent surgery with inadequate post-operative analgesia. In such circumstances, the clinician does not have the luxury of a detailed evaluation or carefully thought out plan for pain control. In this situation, it is advisable for the patient to receive fast-acting analgesics such as intravenous or intramuscular morphine. However, for any number of reasons, pharmacological interventions may be delayed or unsuccessful, and it will rarely present a problem to use hypnosis in such circumstances. Patients experiencing this

type of acute pain may be in crisis, and it might be very difficult to capture their attention. Having patients pay attention to their breathing and gradually slowing it down can be useful at this stage. Also, the clinician can often be most useful by adopting a ‘take charge’ approach, given the patient’s likely regressed emotional state, and by modeling calmness with his or her manner. If the clinician is able to capture the patient’s attention and effectively suggest slower breathing, they can often then provide suggestions for deep relaxation. The patient may fall asleep, or appear to fall asleep, and may be left with the suggestion that upon awakening, they will experience analgesia, calmness and a sense of safety. While treatment planning and provision for acute pain problems tends to be far less complex than it is for chronic pain, there are individual differences between patients, and no single blanket approach will address this problem in all patients.

20.3.3. Case report

This particular case report example is provided by Shelley Wiechman, PhD, a psychologist working with the authors at the University of Washington Burn Center. The patient was a 9-year-old boy with 40 percent flame burns to his upper body. No family members were present during hospitalization, so, in addition to severe procedural pain levels, the patient was anxious and frightened. We were consulted to help the patient deal with the acute pain associated with burn wound dressing changes, decrease his anxiety and improve his overall comfort. The patient responded very well to attention from all adults, and proved to be an easy individual with whom to build rapport. He told us that he was a Harry Potter fan, and we decided to build on this theme for his hypnotic analgesia.

Prior to his wound procedure, the patient was told to get on his broomstick like Harry Potter, and imagine himself flying through forest surrounding Hogwarts. He responded rapidly to this imaginative induction, and was told that the deeper he went into the forest, the more *relaxed* and *in control* he would feel. We then provided a detailed description of what he was seeing in the forest, and suggested feelings of power, control and comfort throughout his flight. Descriptions were included for visual, auditory,

olfactory and kinesthetic senses. In addition, we provided post-hypnotic suggestions that included control over his own ability to find comfort and relaxation, and his ability to take his broomstick and fly to any place he wanted, whenever he wanted, especially whenever he needed to find comfort and relaxation. This post-hypnotic suggestion was linked to a cue which would be provided by a nurse at any time that he needed to feel more comfort and control. During the hypnosis sessions (provided in the patient’s room before wound debridement procedures), the patient would spontaneously put his arms straight out and sway as if he was flying. He looked forward to these sessions, and reported that he responded best when they were led by the therapist. However, the nurses reported that throughout his hospital stay, he would occasionally close his eyes and say that he was going flying, without prompting from an adult. The patient reported lower pain and anxiety scores during subsequent wound care sessions compared with wound sessions that occurred before the hypnosis training. We were also able to expand the script by having him fly on his broom throughout other environments (not just the Hogwarts forest).

This case illustrates that, with children, formal hypnotic inductions are often far less useful than using imagery that is compelling to the patient. It also illustrated how suggestions that address multiple challenges to the patient (i.e. pain, anxiety, a sense of control) can be of use.

20.4. Chronic pain

20.4.1. Evaluation of the patient with chronic pain

When evaluating and treating acute pain, the key issues that need to be addressed include: (1) trait and state anxiety, (2) presence of depressive symptoms, (3) coping style (e.g. avoidance versus sensitizing), (4) sleep quality and (5) history of response to acute pain treatments. Most often, hypnotic suggestions that target perceived pain intensity and unpleasantness (and any other distressing symptoms) that match the patient’s coping style and history are the most appropriate. Similar issues, and often more, need to be assessed and considered when evaluating patients with chronic pain.

Identifying the biological, psychological and social factors that are most likely to be contributing to the ongoing pain and suffering in the patient with chronic pain is an iterative process that begins with an initial evaluation, but also continues as treatment progresses. At the University of Washington Pain Center, the physician usually takes about 1 h to perform the initial history and physical evaluation needed to identify the most likely biological issues contributing to the patient's pain. It similarly takes the psychologist 1 h with the patient and, if available, another 30 min separately with the patient's spouse or significant other, to identify the most likely psychological and social factors contributing to the patient's pain and disability.

It is beyond the scope of this chapter, not to mention our training and expertise, to describe the medical evaluation of a patient with chronic pain. Such descriptions are available elsewhere (e.g. Loeser, 2001). However, we should note that a thorough medical evaluation is necessary prior to initiating pain treatment, whether or not hypnosis will be used. This evaluation is needed to rule out any problems that require immediate biomedical attention and intervention (e.g. undiagnosed cancer, significant lesions requiring surgical interventions), as well as to identify biological causes of pain that might respond to medical treatments that could be provided along with appropriate psychological or social interventions.

The evaluation of the psychological and social factors that might be contributing to the patient's pain problem involves a systematic inquiry of each potential factor that is related to pain and functioning. In addition to asking questions that provide a baseline description of the patient and basic historical information about the pain problem (e.g. history of pain onset, treatments tried and perceived efficacy of those treatments, education history, marital/relationship history, developmental history including history of abuse, psychological treatment history and diagnosis, cognitive functioning if indicated, alcohol and drug use history), a series of questions should be asked that can provide additional specific information necessary to identify the psychological and social factors that are most likely to be contributing to the pain problem.

Many of the same questions useful for assessing patients with acute pain, listed in Table 20.1, should also be asked of patients presenting with chronic pain, including questions to assess pain intensity and unpleasantness, presence and severity of anxiety and depressive symptoms, and presence and type of sleep disturbance. Additional questions are needed when evaluating chronic pain, however. These are presented in Table 20.3, and include questions designed to elicit from the patient information about: the meaning of pain from the patient's perspective; the patient's own model for understanding his or her pain; how the patient copes with chronic daily pain; presence and extent of 'catastrophizing' and other unhelpful cognitions; availability and extent of social support; and how others respond to the patient when he or she displays 'pain' or 'well' behaviors.

The meaning a patient attaches to pain can have a significant impact on how much attention is paid to pain sensations, as well as on the amount of suffering experienced with any pain that is experienced. Does the patient believe that the pain is a signal of ongoing physical damage or that some life-threatening condition is getting worse? Is pain a challenge to be dealt with and managed, or is it viewed as an occasional distraction that has few implications for health and quality of life? It is particularly useful to determine the patient's model for the etiology of their pain. One useful question to ask is, 'What do you think is causing your pain?' (or, alternatively, 'Patients are often told many different things about what is causing their pain; what have you been told?' followed up with, 'And do you agree with this, or do think something else might be happening?').

If the patient's view of the cause of the pain is consistent with the medical evaluation ('Well, I think it is the direct result of my osteoarthritis' or 'I have complex regional pain syndrome'), then it is unlikely that an *illness conviction* (belief that something serious is causing the pain and requires a biomedical fix) is contributing to the patient's pain and disability. On the other hand, expressed vague or specific concerns about the presence of ongoing physical damage or lack of healing ('Something is wrong with my back', or 'I have a shattered vertebra') in the absence of medical evidence for such beliefs

Table 20.3 Questions to ask during a chronic pain evaluation, and the problems/issues associated with each

| Question | Responses can be used to evaluate... |
|---|--|
| What do you think is causing your pain?, or Patients are often told many different things about what is causing their pain, what have you been told? Do you agree with this, or do think something else might be happening? | Illness conviction and biomedical focus. Look for answers that reflect the extent to which patient views pain from a biomedical versus biopsychosocial perspective. |
| What treatments have you tried and what treatments, if any, are you interested in exploring further? | Illness conviction and biomedical focus. How committed is the patient to limiting treatment options to biomedical interventions? Is this a history of or willingness to try psychosocial approaches, or to take primary responsibility for pain management, or is the patient only interested in medications, a surgical intervention or other invasive procedure? |
| What do you do to cope with pain?, and How does your [wife/husband/partner/roommate] know when you are hurting? What does she/he see you do or hear you say? | Use of adaptive (e.g. regular exercise, coping self-statements, seeking social support, activity pacing, ignoring pain, task persistence) and maladaptive (e.g. guarding, pain-contingent resting, asking for assistance, pain-contingent medication use) coping strategies for pain management. Look for general patterns and whether any one coping response really stands out as central to this patient's approach to pain management. |
| What goes through your mind when you have a pain flare-up? | Extent of catastrophizing or other maladaptive cognitions versus coping self-statement cognitions. Look for rigid and unrealistically negative thinking ('It is horrible', 'It will never get better'), including use of extreme words such as 'always' and 'never', versus more flexible and reassuring responses (e.g. 'I know I can handle this'). |
| What impact, if any, has your pain had on your relationship with your [spouse, partner, roommate]?, and How would you say that you and your [spouse, partner, roommate] are getting along? | Availability of global social and emotional support versus a stressful primary relationship (or lack of social support). |
| How does your [spouse, partner, roommate] know when you are hurting? What does she/he see you do or hear you say? What does he/she do when he/she knows you are hurting? What does he/she do when he/she sees you try and do something like exercise or a household chore even when you are hurting? What do you no longer do because of your pain? What do you do less of (but still do some) and more of because of pain? | These questions can be asked of both the patient and his/her significant other to assess (1) the specific pain behaviors shown by the patient; (2) coping responses (both adaptive and maladaptive); (3) possible reinforcers for pain and illness behaviors; and (4) possible reinforcers (or punishers) for well behaviors. |

suggests the presence of unhelpful beliefs that would need to be addressed in treatment.

Another question that can get at the patient's views about the pain is, 'What treatments have you tried and what treatments, if any, are you interested in exploring further?' A long history of repeated biomedically focused treatments, and continued interest in only such treatments, despite a lack of success, suggests the strong possibility of a *biomedical focus*, and perhaps some initial resistance to psychosocial interventions and training in pain self-management. In this case, interventions designed to increase readiness to self-manage pain (e.g. Motivational Interviewing; Jensen, 2002) or the simple passage of time may be needed before treatment that focuses on patient control over pain and its impact can begin.

Another key domain that needs to be understood is how the patient is currently coping with pain. There are a large number of coping strategies that can be used to manage chronic pain. These are generally classified into 'adaptive' and 'maladaptive' strategies (Boothby *et al.*, 1999). Adaptive pain coping strategies are those that have been hypothesized or shown to be associated with better long-term adjustment. They include such strategies as seeking social support, task persistence (not letting pain interfere with function), activity pacing (avoiding both over- and under-doing activities, and rewarding oneself with brief periods of rest on a time- rather than pain-contingent basis), regular moderate exercise, ignoring pain, distracting oneself from pain, practicing self-hypnosis, meditation and/or relaxation as appropriate, and making positive self-statements (e.g. 'I can handle this', 'I'll get through this'). Maladaptive coping responses are those coping strategies thought or shown to contribute to greater pain and dysfunction in the long run, although a number of these are sometimes associated with pain relief in the short run. They include such strategies as extended rest (worst of all—bed rest) and deactivation, resting on a pain-contingent basis, guarding (not moving a body part that hurts or moving in a stiff and guarded fashion) and medication use (especially chronic benzodiazepine use, but also use of high dose opioid medications in the face of little benefit). This domain can be assessed by simply asking the patient,

'What do you do to cope with pain?' Another question, discussed below as a preliminary question for assessing social factors ['How does your (wife/husband/partner/roommate) know when you are hurting? What does she/he see you do or hear you say?'], can also be used to obtain information about coping, as responses to this question often reflect attempts to cope with excessive pain ('I lie down', 'I take a pain pill', 'I try and distract myself by going for a walk').

Frequent use of maladaptive coping and/or lack of use of adaptive coping strategies suggests that some intervention(s) designed to alter coping strategy use is indicated. Strategies for discouraging maladaptive coping include education (about the negative effects of maladaptive coping) and Motivational Interviewing strategies focused on eliciting from the patient reasons for making changes in coping (see Jensen, 2002). The primary strategy for encouraging adaptive coping, once the patient expresses an interest in learning or developing specific adaptive strategies, is to set aside time during treatment sessions to teach these strategies (e.g. teach self-hypnosis, identify specific exercises to engage in, teach the patient a strategy for gradually increasing activity tolerance; see Fordyce, 1976) and provide ample praise and reinforcement for any adaptive changes observed.

Another key psychological factor that can contribute to long-term dysfunction in persons with chronic pain is the presence of catastrophizing cognitions. 'Catastrophizing' refers to having excessively negative thoughts and those that suggest a particularly dire outcome. Such thoughts include, for example, 'It is horrible and I know it is never going to get any better!', 'My life is a mess!' and 'I'll never be able to work again!' There is some disagreement in the field of pain about whether catastrophizing responses best represent a type of coping strategy (e.g. as a way to elicit support from others; see Sullivan *et al.*, 2001) or a type of maladaptive cognition (see Jensen *et al.*, 1994). However, whether or not catastrophizing is viewed as a coping strategy, attribution or both, there is consensus that catastrophizing cognitions are more maladaptive than adaptive, and evidence shows consistently strong associations between catastrophizing cognitions and measures of patient dysfunction (cf. Boothby *et al.*, 1999).

One can obtain a clear sense of a patient's tendency to catastrophize during the entire evaluation by listening carefully to the patient's language. Frequent use of words that reflect either/or thinking ('never', 'always'), or excessive negative views of the future that emerge when discussing treatment options provide important evidence of the presence and severity of catastrophizing responses. Also, the patient's response to a simple direct question ('What goes through your mind when your pain gets worse or you have a pain flare-up?') can provide information about the patient's ability to problem-solve flexibility around the issue of pain, versus a tendency to respond rigidly and automatically with negative thoughts that then lead to maladaptive coping.

If significant catastrophizing is present, then the chances are good that the patient is depressed or has significant depressive symptoms. In this case, treating the depression should be given high priority, because pain self-management requires significant effort, and can be particularly difficult when the patient has to deal with the motivation-killing effects of this affective disorder. Given the importance of treating significant depression quickly and effectively, it is worth offering patients multiple treatments as soon as possible after depression has been diagnosed, including: (1) appropriate medication management by the patient's treating physician; (2) reactivation and exercise (e.g. Dunn *et al.*, 2005); (3) cognitive-restructuring (e.g. Ehde and Jensen, 2004); and (4) hypnotic approaches (Yapko, 2001; see also Yapko, Chapter 22, this volume).

Sleep disturbance is another significant problem reported by many persons with chronic pain. It is also a problem that can respond well to hypnotic interventions (e.g. Elkins *et al.*, 2004), as well as to more classic sleep hygiene training (Montgomery and Dennis, 2003). Knowledge about problems with sleep onset ('Once you are in bed and ready to go to sleep, how long does it usually take you to get to sleep?'), nocturnal awakenings ('About how many times a night do you wake up, on average, and how long does it usually take you to get back to sleep when you do wake up?'), early morning awakening ('What time do you usually wake up in the morning?'), and extent of restful sleep ('Do you usually feel rested when you wake up in the morning?')

are all important to assess, and will impact the specific hypnotic suggestions you might consider if this is a problem for the patient.

The two social factors most frequently assessed during a comprehensive evaluation of chronic pain are (1) general social support and (2) spouse or significant other responses to patient pain and well behaviors. Social support has long been studied as an important variable that can buffer the negative effects of chronic illness. Research in persons with chronic pain indicates that general social support is linked to positive mood (and lack of depression) and to lack of pain interference with activities (e.g. Jensen *et al.*, 2002). However, given the very high risk that people with chronic pain have for developing depression, and the cascading negative impact of depression on adaptive coping, the availability of positive social support (and the modification of stressful relationships) is likely to be important for many patients. Questions that assess the nature of the quality of the relationship between the patient and the key person(s) in his or her life include, 'What impact, if any, has your pain had on your relationship with _____?', and 'How would you say that you and _____ are getting along?' Ideally, you will have an opportunity to speak with the person that is most important to the patient (and who that person is when they come to the interview can be telling; I am aware of one patient who had brought his bartender with him as his 'significant other' during an evaluation at our center, and one patient I interviewed brought in her pet dog) to get their responses to these two questions. More importantly, the presence of the patient's significant other during the initial evaluation provides an opportunity for you to observe them both together for at least some period of time. For patients who live with someone, and to the extent that problems in that relationship contribute to overall stress or do not allow for the benefits of positive support, then couples' therapy might be offered as a means of increasing mutual global social support in the relationship.

For those patients who have very limited support available, for example patients who live alone and have very little regular contact with supportive others, but who might be interested in developing supportive relationships,

communication (e.g. assertiveness) training or counseling around methods for meeting and developing close relationships may be of help. If the lack of a close supportive relationship is a significant issue that has an impact on the patient's adjustment to pain, and this is related to developmental issues (e.g. history of abandonment or abuse), they might respond well to analytic counseling (see Baker and Nash, Chapter 16, this volume), and offering this or a referral for this treatment should be considered.

Although global positive social support, or 'unconditioned positive regard', from at least one person can help to buffer the stress of chronic pain problems, pain-contingent positive responses (i.e. showing intermittent 'support', and then only or primarily when the patient displays pain behavior) seems to provide little emotional benefit, and may, in fact, undermine functioning through a learning process of reinforcement of illness behavior (Fordyce, 1976). Similarly, criticism or expressions of worry and concern when the patient begins to participate in exercise (i.e. discouragement of 'well behavior'), while often well intentioned, can backfire and interfere with progress and adaptive functioning (cf. Schwartz *et al.*, 2005).

The series of questions used to assess significant other responses to well and illness behavior can include the following: (1) 'How does your ____ know when you are hurting? What does she/he see you do or hear you say?' (to assess pain behaviors typically displayed); (2) 'What does he/she do when he/she knows or thinks that you are hurting?' (to assess presence of positive reinforcement for pain and illness behaviors); and (3) 'What does he/she do when he/she sees you try and do something like exercise or a household chore even when you are hurting?' (to assess possible discouraging responses to well behaviors). Other questions that can assess possible reinforcers include: (1) 'What do you no longer do because of your pain?' and (2) 'What do you do less of (but still do some) and more of because of pain?' The answers to these questions can identify possible activities that may be providing ongoing reinforcement. For example, if the patient is now doing more activities because of pain that he/she finds pleasurable, such as watching television, or avoiding activities that might be aversive, such as

household chores or paid work, these might be providing ongoing positive and negative reinforcement, respectively. The key with these, and similar, questions, is to determine if reinforcement of pain behaviors might be playing a role in the patient's ongoing disability.

Finally, in each evaluation of a person with chronic pain, as with a person with acute pain problems, it is wise to identify the presence of any specific psychological diagnoses. Approximately one-third of patients with chronic pain meet criteria for a major depressive disorder. Many other patients with chronic pain experience significant depressive symptoms, even if they do not quite meet criteria for a major depressive disorder. For many, these symptoms developed after the onset of chronic pain, and, as mentioned above, can have a significant negative impact on patient motivation for adaptive pain self-management. Significant motivation is necessary for positive outcomes of treatment, including hypnotic analgesia treatment. Therefore, it is necessary to assess the presence and severity of depression, and then provide appropriate treatment when depression is present.

Although depression is the most frequent psychological diagnosis observed in patients with chronic pain, other DSM-IV-R diagnoses are also common. These include post-traumatic stress disorder, and a variety of anxiety and axis II (personality) disorders. Each of these will need to be addressed in the treatment plan, if present. Obviously, appropriate referrals should be made if the clinician does not have expertise in treating such co-morbid conditions.

20.4.2. Chronic pain treatment plan development and implementation

Based on the initial evaluation, a number of factors that are probably contributing to the patient's chronic pain and disability will be identified. The most common factors are listed in Table 20.4, and include: (1) high pain intensity; (2) significant pain bothersomeness; (3) illness conviction/biomedical focus; (4) use of maladaptive coping strategies (e.g. pain-contingent rest, inactivity, guarding or withdrawal); (5) lack of use of adaptive coping strategies (e.g. regular appropriate exercise given the condition, use of self-hypnosis if appropriate); (6) presence of

Table 20.4. Specific problems and factors that can contribute to poor adjustment to chronic pain, associated treatment options and hypnotic suggestions that can be of benefit

| Problem/issue | Treatment options | Hypnotic suggestions for... |
|--|---|---|
| High pain intensity | Appropriate medication management, appropriate exercise, hypnosis | See Table 20.2 |
| Significant pain bothersomeness | Cognitive-restructuring, acceptance therapy, hypnosis | Decreased bothersomeness of pain, ability to ignore pain |
| Illness conviction/ biomedical focus | Education, hypnosis, appropriate exercise, cognitive-restructuring | Increased understanding of the complex nature of pain, and of the psychological factors that can impact pain |
| Use of maladaptive coping strategies/lack of use of adaptive coping strategies | Education, Motivational Interviewing modeling, operant therapy, hypnosis | Age progression imagining effective use of adaptive coping strategies |
| Catastrophizing | Cognitive restructuring, hypnosis | Age regression imagining adaptive cognitions in response to pain flare-ups |
| Sleep disturbance | Elimination of inappropriate long-term sleep agents (e.g. benzodiazepines), consider medications that might help with sleep (e.g. some anti-depressants), sleep hygiene education, exercise, hypnosis | See Table 20.2 |
| Significant anxiety, depression or personality disorder | Exercise, appropriate medications (e.g. anti-depressants), cognitive-restructuring, in-depth counseling or analysis | See Chapters 21, 22 and 23, this volume, for ideas regarding use of hypnosis for the treatment of anxiety, depression and personality disorders, respectively |
| Lack of social support | Couple's therapy, communication training, in-counseling/analysis if related to personality disorder | Hypnosis generally not used directly to address issues related to a lack of social support |
| Presence of reinforcement of pain behavior, or discouragement of well behavior | Education, couple's therapy or education, operant therapy | Hypnosis generally not used directly to address issues related to presence of reinforcement of pain behavior, or to the presence of discouragement of well behavior |

catastrophizing cognitions; (7) sleep disturbance; (8) significant depression, anxiety or personality disorder; (7) lack of social support; and (8) presence of social reinforcement of pain behavior or social discouragement of well behavior.

To the extent that each of these issues is present, it should be dealt with in order to improve the patient's overall quality of life. For example, for patients with a maladaptive illness conviction and/or a biomedical focus for their pain problem, a reasonable treatment goal would be

for the patient to develop a more complex biopsychosocial understanding of their pain problem; an understanding which would increase their willingness to consider and engage in psychosocial interventions such as appropriate exercise, cognitive-restructuring and self-hypnosis. For patients who are using maladaptive coping strategies or who catastrophize, the goal would be to teach them to recognize the pernicious effects of their coping efforts and cognitions, and replace them with more adaptive ones.

After the initial evaluation of case formulation, the next step is to come up with a list of reasonable treatment options to address the problems identified. In the next section, we discuss how hypnosis, specifically, might be utilized for addressing each of the problems or issues listed in Table 20.4. Examples of specific hypnotic suggestions that we have found helpful for persons with chronic pain are presented in the Appendix (see also Barber, 1996, for additional examples of suggestions helpful for patients with chronic pain conditions).

20.4.2.1. High pain intensity and pain bothersomeness

The most obvious application of hypnosis to pain management that comes to the minds of patients and clinicians is to reduce pain and associated suffering. The basic strategies for achieving this goal for acute pain (e.g. inductions followed by suggestions for relaxation, comfort, amnesia, dissociation, time distortion, pain displacement, sensation alteration, decreased pain and distraction) were described above (see also Table 20.2; and see the Appendix for specific examples of text for these suggestions). Many patients, even those with only moderate and some with minimal general hypnotic skills, are able to respond to one or more of these suggestions.

When using hypnosis to improve self-management of pain, we usually begin with an induction, and then provide a series of different pain management suggestions, assessing the efficacy of each with this particular patient during the sessions. The induction we most often use with patients with chronic pain begins with relaxation (see Appendix for text for relaxation suggestions, which can be used as an induction). Almost everyone is able to respond well to suggestions for relaxation, so using these as an induction can teach patients an important skill right away that is generally useful for coping with chronic pain. However, if the patient has experience with hypnosis and has a favorite induction, we would normally then start with that induction. As treatment progresses, we experiment with different inductions (including the use of imagery and ideomotor inductions) to keep the patient interested, and determine which combinations of suggestions seem

to invoke the deepest experiences of hypnosis. When an induction strategy is identified after several sessions that seems to work well with the patient, we then tend to stick with that induction for that particular patient for the remaining sessions (although always altering it a little to maximize patient interest and absorption in the induction). In short, as treatment progress, it is the patient's response to the inductions (and subsequent suggestions, see below) that drives the content of these.

Following the induction, in the first session, we usually systematically present a series of suggestions for increased comfort, decreased pain, increased control over pain and decreased bothersomeness for pain (see Appendix for examples of text that can be used for these suggestions). In our experience, suggestions for deep relaxation and reduced bothersomeness of pain are the easiest for most people to respond to, including those with relatively low baseline general hypnotic talent. However, in the first few treatment sessions, we usually offer a number of different suggestions, and assess the immediate impact of these on pain perception (by asking patients to report on their pain intensity during the hypnosis session; in order to help ensure that this does not interrupt their hypnotic experience, the clinician can say, 'And now, while allowing the muscles of your voice to become activated while still remaining relaxed, and deeply focused, please tell me, on a 0 to 10 scale, with 0 being 'no pain sensation' and 10 being 'pain sensation as intense as I could imagine', how would you rate the current intensity of any uncomfortable sensations you are feeling now?').

Metaphors for pain management can also be provided following an induction (or as part of an induction) to patients who might be responsive to these (Eimer, 2000). Erickson, of course, was a master at using metaphors in hypnosis treatments, including treatments of chronic pain. When using this approach, the clinician tells a story that contains indirect suggestions for how the patient might more effectively manage pain or its effects. The assumption is that such stories are more easily absorbed by some patients than more direct suggestions. Indeed, in our practice, some patients seem to respond well to this approach. One example of such a 'story' is presented in the Appendix.

Following the analgesia suggestions, we almost always provide post-hypnotic suggestions. However, the post-hypnotic suggestions used for patients with chronic pain usually differ from those that are used for acute procedural pain. Because the treatment goal for chronic pain is usually to minimize the experience of pain throughout the entire day (and night), not just during specific times, post-hypnotic suggestions are made that: (1) ‘...all feelings of comfort and relaxation, and any benefits of the session, will stay with you and linger beyond the session, for minutes, hours, days and, with practice, months and years’; (2) the patient may choose to practice on his or her own without a tape, at any time, and as often as needed, by ‘taking a deep breath, holding it, and letting it go.... And all of the feelings of comfort, relaxation, and.... [insert suggestions for any other perceptions or feelings tailored to the patient] will come washing back, and will then stay with you and linger ... even after you are done practicing ...’ (Barber, 1996); (3) the more the patient practices, with or without a practice tape, the easier it will be for the patient to enter a state of comfortable relaxation, and the more quickly he or she will respond to suggestions ‘...that are appropriate for your comfort and well-being.’

The primary goal with the post-hypnotic suggestions, indeed, with the entire procedure, is to teach the patient a skill that he or she can use at any time to reduce his or her experience of pain that will, over time, become automatic. A few patients need only a few treatment and practice sessions in order to achieve substantial pain reductions that appear to be mostly permanent. Most will require a number of treatment sessions and frequent practice to be able to achieve pain relief, on (self-) command, that will last a few hours or most of the day.

After each treatment session, we then discuss with the patient his or her thoughts, feelings and responses to the induction and each of the suggestions offered. Information from this discussion is used to modify future inductions and suggestions as appropriate. In addition, we frequently identify, with the patient, a non-pain goal such as improved sleep, improved confidence or increased overall well-being that the patient is particularly interested in, and incorporate suggestions that pertain to this goal.

This is done in part to ensure that the patient is able to use hypnosis treatment to address all of his or her needs, but also to increase the patient’s investment and engagement in treatment and to emphasize (patient) self-control.

Based on the patient’s response to the pain-related suggestions in the first two sessions, we then select one to three of them for use in the remaining sessions. During the third session, these suggestions are provided after an induction that is tailored to the patient’s interest, skills and needs, based on his or her responses during the first two sessions. This third session and the next session (and sometimes more, if we believe that more tapes or tapes with different content would be helpful) are also taped, and the audiotape is given to the patient with the instructions that ‘...you should listen to this tape at least once a day during a time when you are awake and can focus on the tape without interruption; more often than once a day will be fine and, in fact, the more often you listen to the tape, the faster your progress will be’. We make more than one tape to allow the patient more than one option, and given him or her a chance for variety if this would be helpful.³ The remaining sessions most often continue using the primary suggestions, modified when appropriate, selected during the first two.

Although response to treatment is variable, many patients report that they are able to achieve some level of pain relief following treatment and after listening to the practice tapes, and that this relief continues after the treatment sessions and practice tapes (Jensen *et al.*, 2005). Some patients report that they are unable to achieve lasting reductions in pain intensity, but even these patients often report that the pain they do experience seems to bother them less.

³ Once, during the induction of one of the taped sessions, one of the authors (M. J.) coughed. But he continued with the session and the recording anyway. Although both the author and the patient expected the audiotape to be useless because of the loud cough, the patient reported that, in fact, the anticipation he experienced before the cough on the tape contributed to a more effective response to the induction after the cough; ‘I just wait for that cough, and then sink right down into a deep state’. This tape became the patient’s favorite.

Most report that they feel more in control over pain, and its effects on their lives.

It is important to remember, however, that hypnotic analgesia treatment should be provided in the context of understanding all of the factors that might be contributing to the patient's pain and disability levels. For example, if the patient is complaining bitterly of severe pain, but is coping with this pain by spending the bulk of his or her time reclining in bed or on a couch, then suggestions that focus exclusively on pain reduction are unlikely to be of benefit. If significant social reinforcers for pain and illness behavior are identified, significant illness conviction is present or the patient engages in frequent catastrophizing, and these issues are not addressed in treatment, simple suggestions for pain reduction in and of themselves are not likely to produce significant or long-lasting improvements. In fact, patients with significant illness conviction and biomedical focus may be interested in hypnotic analgesia as another treatment that is 'done to' them (like surgery or medications), and could potentially undermine a self-management approach to pain management. Moreover, hypnosis focused merely on pain reduction out of the context of a comprehensive treatment plan that addresses the multiple biological, psychological and social issues involved could potentially be yet one more in a long line of 'magical' cures that the patient has tried for their pain, with its failure being viewed as yet another in a long line of discouragement.

Thus, when presenting and using hypnosis for chronic pain, we label this treatment as 'self-hypnosis' and present it as a specific skill that patients can learn and then use themselves. We explain that the goal is to help them learn strategies to increase their confidence, strength and control over pain so that they can 'do more, and hurt less'. We also emphasize the importance of addressing all of the potential pain-related problems identified in the initial evaluation (see Table 20.4), and of participating in treatments that will address these.

20.4.2.2. Illness conviction and biomedical focus

The traditional interventions designed to reduce illness conviction and a biomedical focus in patients with chronic pain are education

(to help patients understand the complex biopsychosocial factors that influence pain and its effects on their lives), graded increases in exercise and activity (to teach patients that any pain or discomfort that often accompanies exercise tends to dissipate over time as they become stronger and develop more activity tolerance) and cognitive-restructuring (to help patient learn to alter automatic thoughts from ones that are illness focused to ones that reflect more calming and reassuring beliefs).

However, hypnosis can be used to help enhance the efficacy of each of these other therapies. For example, during hypnosis, patients can be given suggestions that they ponder the fact that chronic pain is rarely the result of a single biological cause, that many factors can increase a person's focus on and experience of pain, and that this means that they can gain more control over their experience of pain. ('You may have found in your life that it seemed that there was only one alternative. Wouldn't it be interesting to realize that you have so many more ways to look at your pain then you might have realized were there...'). You can then go on to describe factors and events that can contribute to pain that match the key factors in the patient's life; factors which he or she has control over (the meaning given to pain, how others respond to the patient, etc.). Careful evaluation of the patient's responses to these suggestions will determine if the patient finds them comforting and empowering. If so, then of course they and similar suggestions would bear repeating in future sessions and on practice tapes.

Similarly, to the extent that the patient is frightened of pain associated with reactivation or exercise, hypnosis can be used to address this fear much like one would use hypnosis for managing anxiety associated with painful medical procedures. Added additional suggestions might include the obvious, ('And you may find that it becomes so easy to do that exercise that you know that is good for you.... Even though you will know deep inside what is safe and when you should stop, you will be amazed at how strong and confident you will feel as you exercise...'). Other suggestions can focus on the benefits that naturally occur with exercise, and the view that the old feelings of muscle discomfort can be taken as signs that the muscles and tendons that

require exercise are responding to exercise ('...with time, as your body becomes stronger and more flexible, you will find that the discomfort becomes less and the exercise becomes even easier Knowing that one sign of muscles getting stronger is that they let you know you have been using them...'). It is important, of course, that any exercise program be supervised and approved by an experienced medical professional, to ensure that continuing with exercise despite the discomfort that often accompanies exercise in persons with chronic pain is medically indicated.

20.4.2.3. Use of maladaptive coping and/or lack of adaptive coping

Patients who are using pain coping strategies that are thought to contribute to increased pain and disability over time (in particular, pain-contingent rest and guarding), or who are not using coping strategies thought to contribute to long-term positive outcomes (regular moderate exercise, positive coping self-statements) can be provided with individual or group didactic education to teach the consequences of different coping responses, Motivational Interviewing for making adaptive changes (Jensen, 2002), or even operant therapy during which adaptive responses to pain are selectively reinforced (Fordyce, 1976).

However, we also believe that hypnosis is underutilized by pain clinicians seeking to assist patients in altering their coping responses. One particularly effective hypnotic strategy is age regression or age progression. In age regression, and following the hypnotic induction, the patient can be asked to imagine a time when he or she was moving normally (as an indirect suggestion to decrease guarding responses), exercising regularly or engaging in some specific response that would be considered adaptive for pain management. In the same, or different, session, the patient could then imagine himself or herself in the future, effectively using adaptive coping strategies to manage pain in a realistic way (e.g. 'You can see yourself feeling confident and strong. Confident because you exercise almost every day, and you know that you are becoming stronger and stronger. Soon, you will be strong enough to do whatever it is that you need to do. You can see yourself, walking normally and briskly, feeling so good and so proud,

because you have done the work to reach this point ... and you can feel proud of yourself as you are doing this work ... proud and confident ... building your strength, so that you feel confident in your ability to [insert some valued activity]'). In age progression, in particular, the clinician can offer effective imaginative reinforcers (feeling proud, working again and making money, completing a valued project, being active with family or friends in a valued activity) for adaptive coping; in essence, performing hypnotic/imagined operant conditioning.

20.4.2.4. Catastrophizing

The first-line treatment for pain-related catastrophizing is cognitive-restructuring (Ehde and Jensen, 2003). This treatment involves teaching patients to identify, stop and then alter (to reassuring adaptive cognitions) automatic catastrophizing cognitions when they occur. While it is certainly possible, and appropriate, to engage in cognitive restructuring outside of the hypnotic context, once adaptive cognitions are identified and agreed upon by the patient as reasonable, these can be offered during hypnosis. For example, it could be suggested to patients that whenever they experience any uncomfortable feeling, not only can this be a cue to '...take a nice deep breath, hold it ... hold it for a moment ... and let it go ... and experience a feeling of relaxation', but it can also be a cue to 'be aware of just how surprisingly calm you can feel ... calm, and confident ... that you can handle discomfort ... as you have before, and will again So easy to ignore ... not bothersome at all ... and it does not really need to mean anything ...'. In essence, the goal is to help the patient replace any old, maladaptive, catastrophizing, cognitions with new, reassuring, thoughts in response to pain. As another example, patients can be trained in hypnosis to distance themselves from catastrophizing cognitions 'You may notice that whenever you have those old, inaccurate automatic thoughts, that these are immediately replaced by accurate and reassuring thoughts, for example, how strong and regular your heartbeat is and how slow and regular your breathing is You may find that you are able to observe yourself having those silly thoughts. In fact, you might even be entertained at how exaggerated, inaccurate, and silly they really are, and how they seem

to then just disappear, on their own ... and occur less and less frequently, in fact, at some point in the future, and really only you can know this, wouldn't it be interesting when you notice that these old, unhelpful thoughts have disappeared altogether?

20.4.2.5. Sleep disturbance

The use of hypnosis to help patients improve and maximize restful sleep in the face of pain was discussed above as it related to acute pain, and all of the interventions described there (except, perhaps, the use of sedative sleeping medications which are contraindicated for long-term use) apply here as well, including the use of medications that can help with sleep and are appropriate for long-term use (e.g. some anti-depressants), sleep hygiene education and hypnotic suggestions to address any specific sleep problems. Basic sleep hygiene (having the bed become a stimulus for sleep, avoiding caffeine in the late afternoons and evenings, and getting out of bed and engaging in activity) should be encouraged in any patient who complains of sleep difficulties. In addition, regular aerobic exercise can also help with sleep, and hypnotic suggestions to encourage this and make it more pleasurable (or, at least, less uncomfortable) would be appropriate. Using hypnotic suggestions directly to improve sleep ('you will fall into a profound sleep and will awake feeling rested in the morning') can also be used to reinforce sleep hygiene ('You will find yourself going to bed only when you are tired and sleepy ... you will also find that you wake up when it is appropriate').

20.4.2.6. Depression, anxiety and/or personality or character disorder

Patients with significant depression, anxiety, or who have a character disorder, will ideally have had these problems addressed before pain treatment begins. As indicated above, significant depression is particularly common among persons with chronic pain, and its presence can undermine efforts to encourage pain self-management. All treatment options should be considered. Medication management, cognitive-restructuring, exercise and behavioral (increase pleasurable activities) interventions have all been shown to be effective, and it is likely that more patients would benefit faster if all of these

are tried simultaneously (needless to say, such treatment should be referred out if not within the expertise of the pain clinician). In addition, however, interventions for depression, anxiety and character disorders that incorporate hypnosis also exist (see the chapters that address these issues in the present volume), and should be considered.

20.4.2.7. Lack of social support and/or reinforcement of pain and illness behavior/lack of reinforcement of well behavior

Finally, the pain clinician needs to consider the extent to which lack of social support, or the presence of maladaptive social interactions, might be contributing to the patient's pain and illness behaviors and suffering. The most common interventions to address these issues include education (to teach operant principals to the patient and his or her significant other), couple's therapy (to increase the frequency of mutually supportive behaviors as well as to encourage patients to negotiate with their significant other alternative responses to the patient's pain and well behaviors), communication training (to help improve the patient's skills at building and maintaining supportive relationships) and in-depth analysis or counseling (to address characterological problems if these are contributing to the lack of quality relationships).

While we do not typically use hypnosis to address these issues in our practice, the pain clinician needs to be aware of their role in any particular patient, and ensure that if they are playing a role, they are addressed in treatment. If they are not addressed, then efforts to improve the patient on other fronts might fail. For example, to the extent that developing and maintaining a regular exercise program is central to a patient's improvement, then efforts to encourage exercise might be undermined if the patient's significant other panics at the sight of watching the patient exercise ('Stop that! You'll hurt your back!'). Similarly, hypnotic analgesia to decrease the experience of pain might prove futile if communication about this pain is one of the few options available to the patient to help him or her manage the aversive behavior of his or her spouse.

In summary, appropriate integration of hypnosis in chronic pain treatment requires that the clinician understand the many biopsychosocial factors that can contribute to pain and its expression, perform a thorough evaluation to assess these factors and consider them all when developing and implementing a treatment plan. Hypnosis can be a powerful tool that teaches patients to be able to gain more control over their experience of pain and suffering, and to enhance the efficacy of other curative or helpful treatments, such as exercise and cognitive-restructuring. But hypnosis should be used in conjunction with other treatments to address all of the issues contributing to pain and disability in any one patient.

20.4.3. Case report: a man with below-level chronic spinal cord injury pain

D. J. is a 40-year-old man presenting with chronic low back and hip pain below the level of his L1–2 incomplete spinal cord injury. He was injured 20 years prior to seeing me (M. J.) in a motor vehicle accident in which he ran off the road while under the influence of alcohol. At the initial evaluation he reported being mostly sober since the accident, and entirely sober (free from all alcohol and illegal drugs) for the past 12 years. He was running his own business (a computer networking consulting business) from home. Although he had never been married, he had been living with a partner for the past 5 years, and they reported a close, supportive relationship. He reported some mild symptoms of depression and anxiety (occasional sad mood and anxiety), but did not meet criteria for a mood disorder, nor did he meet criteria for a character disorder.

Pain levels pre-treatment were moderate to severe (range, 4–9 on a 0–10 scale; average, 7). He was not using any medications to manage pain, reporting that none was adequately effective, although he had tried many. Even though his pain was severe at times, he reported minimal impact on his day-to-day life except for sleep (sleep interference was rated as 4/10). There was no evidence that psychological factors were contributing significantly to his ongoing pain experience, and his hypnotizability, as assessed by the Stanford Clinical Hypnotizability

Scale, was moderate (3/5). He also reported having positive experience with ‘touch’ therapy in which he was able to experience pain relief when a layperson ‘changed my energy flow’ by moving her hands around the patient (i.e. not actually touching the patient). However, this relief was temporary. Other treatments tried, including physical therapy, massage and a number of medications, provided, at best, only minimal pain relief.

Using the chronic pain treatment protocol described above, the first two treatment sessions started with a relaxation induction followed by a series of five different suggestions: very deep relaxation; sensory substitution; decreased pain; imagined anesthesia; and decreased pain unpleasantness. Before the third treatment session, we decided to focus on two of the suggestions that he seemed to respond the best to (decreased pain intensity and unpleasantness) for the treatment sessions as well as in the practice tapes. The third and fourth sessions were audiotaped and included the suggestions that the benefits of treatment would linger beyond the sessions, and also that the patient would become more skilled with practice (see the Appendix for examples of text that can be used for such suggestions). The patient was given the tapes and encouraged to practice at least once daily.

The patient reported that his pain intensity consistently decreased substantially (to 0.5/10 from a range of 2–8 before the session) across each treatment session, and that the pain reduction that occurred lasted for 1–5 h. After the first two sessions, he practiced regularly, and so was able to maintain a much lower level of pain in his day-to-day life by initiating self-hypnosis whenever his pain intensity increased to uncomfortable levels (usually, greater than 2/10). He reported improvement in depressive symptoms (from a low–moderate range to virtually none; CES-D scores from 10 to 4, pre- to post-treatment), as well as in the interference of pain with sleep (from 4/10 to 0/10). At post-treatment, his average pain intensity rating was 2/10.

At 12-month follow-up the patient reported that he practiced self-hypnosis for 5 min at a time (without practice tapes, but which he still had on hand ‘just in case’), 3–4 times daily. He said he used his skills to maintain his pain

intensity at low levels, and described an ability to decrease pain intensity ‘immediately’ when he practices self-hypnosis. However, as occurred during treatment, he was not able ever to lower his pain to 0/10 using self-hypnosis. He added that he experienced his pain as more ‘friendly’ and much less ‘harsh’, ‘sharp’ and ‘stingy’ compared with how it felt before treatment

20.5. Summary and conclusion

Enough controlled trials have been performed to conclude that hypnotic analgesia can effectively reduce both acute and chronic pain (Montgomery *et al.*, 2000; Patterson and Jensen, 2003; Jensen and Patterson, 2006). However, the application of hypnosis for acute pain and chronic pain differs in important ways. When using hypnosis for acute pain, the focus of treatment is almost always on the experience of pain and associated symptoms (e.g. anxiety, sleep disturbance), and hypnotic analgesia suggestions are most often linked to the specific procedures or injuries that are causing the pain. The use of hypnotic procedures for treating chronic pain is more complex. Even when the focus of treatment is on the experience of pain, the goal of chronic pain treatment is to teach self-hypnosis skills that the patient can use on a daily basis. In the situation where pain treatment involves more goals than just decreasing pain intensity (which should be most of the time when treating chronic pain), hypnosis can also be used to enhance the efficacy of other treatments, such as cognitive-restructuring and exercise. Hypnotic interventions can also be used to address symptoms frequently associated with chronic pain, such as sleep disturbance, depression and anxiety. Our view is that hypnosis should be offered to any patient with pain who is interested in it, and that it should be integrated much more into standard pain treatment than it currently is.

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Appendix: useful suggestions for persons with acute and chronic pain conditions⁴

Suggestions for relaxation (can be used with patients who are participating or will participate in a painful medical procedure, or for patients with chronic pain, to obtain increased feelings of relaxation in the face of pain; these suggestions can also make an effective induction for individuals with limited baseline hypnotic ability).

And now Allow your whole body to relax ... Allow all your muscles to go limp ... and now let's focus on particular muscle groups ... to relax even more Let's start with your right foot ... Imagine

⁴ Many of the suggestions listed for chronic pain listed here are adaptations of suggestions used in a case series of hypnotic analgesia for chronic pain (Jensen *et al.*, 2005), which themselves were authored for that study primarily by Joseph Barber, PhD (see Barber, 1996 for more detailed discussion of these and other suggestions for pain management).

that all the muscles and tendons in your right foot are relaxing, ... and as your right foot relaxes, being aware of those sensations that let you know that your hand feels more relaxed ... perhaps a sense of warmth, or of heaviness, perhaps an interesting tingling sensation, whatever sensation that lets you know that your foot is becoming more and more relaxed ... limp, heavy, warm and comfortable. And now allow that relaxation to spread ... up, up into your leg ... your calf, your knee, your upper leg. Your whole right leg becoming more and more relaxed, relaxed and heavy. All the tension draining away, as your leg feels heavier, and heavier, almost as if it were made of lead. So comfortable, so relaxed. And now ... allow your awareness to move now to your left foot Imagine how your left foot is becoming limp, heavy and relaxed ... more and more relaxed, heavier and heavier All the tension just draining away Let yourself be aware of any sensation that lets you know that your left foot is relaxing ... a warmth, a heaviness, any sensation that lets you know that your left foot is becoming more, and more relaxed And now allow the relaxation to spread. Up into your left leg ... calf ... through your knee, and into your upper leg. So very relaxed, heavy and comfortable ... your whole left leg relaxing, heavier and heavier And now your right hand ... Imagine that all the muscles and tendons in your right hand are relaxing, ... and as your right hand relaxes, being aware of any sensations that let you know that your hand feels more relaxed ... whatever sensation that lets you know that your right hand is becoming more and more relaxed ... limp, heavy, warm and comfortable. And now allow that relaxation too to spread ... up, up into your wrist ... your forearm, your elbow, your upper arm. Your whole right arm becoming more and more relaxed, relaxed and heavy. All the tension draining away, as your arm feels heavier, and heavier, almost as if it were made of lead. And now ... allow your awareness to move now to your left hand Imagine how your left hand is becoming limp, heavy and relaxed ... more and more relaxed, heavier and heavier All the tension just draining away Let yourself be aware of any sensation that lets you know that your left hand is relaxing ... a warmth, a heaviness, any sensation that lets you know that your left hand is becoming more, and more relaxed And now allow the relaxation to spread. Up your wrist ... forearm ... through your elbow, and into your upper arm. So very relaxed,

heavy and comfortable ... your whole left arm relaxing, heavier and heavier And as you continue, as you allow both of your legs and both of your arms to feel more and more relaxed, you can be aware that the relaxation continues to spread ... into your shoulders. All the muscles in your shoulders letting go, relaxing, feeling the support of the (chair/bed), sinking into the (chair/bed), letting all the tension drain out of your shoulders ... Feeling so relaxed, so heavy, and More and more at ease And the relaxation continues to spread ... into your neck. All the muscles and tendons of your neck letting go, one by one. Just allowing your head to rest back, the feelings letting you know that your neck is relaxing, more and more, as you feel more and more comfortable, more and more at ease. Your whole body becoming relaxed, very, very relaxed, relaxed ... heavy, calm and peaceful

Suggestions for comfort (effective for anyone who is or might be feeling uncomfortable; suggestions for comfort need not stand alone, and can be effectively inserted into other suggestions if the clinician believes the patient would benefit).

And as you ... [insert whatever other suggestions you are providing] ... you can feel yourself becoming more and more comfortable ... at ease ... with nothing to bother and nothing to disturb ... comfort flowing in and around your body ... sinking in ... deep into every muscle, every nerve, every tendon ... being more, and more, aware of your own comfort ... it feels so good ... to feel so comfortable ... physically comfortable ... mentally comfortable...

Suggestions for amnesia (tends to be particularly effective for patients who score high on measures of hypnotizability for forgetting discomfort associated with specific medical procedures).

For acute pain:

You may find that when you sit in the dental chair that you start thinking about a movie. This might be your favorite movie, or a movie that your own mind creates. You can become so involved in this movie that you forget everything else. All you think about it is how fascinating the movie is and how much you enjoying it. With time you will realize that you have forgotten everything else. And, at some point you will surprised when you are told that the dentist is done and it is time to go home. You will have forgotten everything else other than your comfort and the interesting, absorbing movie.

For chronic pain:

As you know, there are periods of time that you feel less pain, and times that you feel more pain. Pain can come ... and pain can go. Now here is something very interesting ... listen carefully ... after any period of time that you might have experienced more pain, on average, you will be surprised, sometimes very surprised ... to look back and notice that you do not seem to be able to remember very well, if at all, any periods of greater discomfort. You may have the sense that *something* has happened during that period of time, but you will not recall that you felt any pain during that period. With time you will start to realize that your memories are becoming increasingly pleasant. Wouldn't it be interesting to find that more and more you are able to focus on, and recall, periods of increased comfort, as your memory of the most important periods of your life consist of periods of hope, comfort and pleasant confidence

Dissociation suggestions (can be used with patients who are participating or will participate in a painful medical procedure, or for patients with chronic pain to obtain pain relief; tends to be more effective among patients who cope with pain and anxiety by avoidance).

Right now you are sitting in a chair listening to my voice, breathing in and out and most likely feeling relaxed. As you remain very comfortable listening to my voice and relaxing without a care in the world, I want to talk to you about how your brain or your mind works. Your mind is capable of doing several things at once. When you are driving, your hands are directing the steering wheel, your feet are touching the gas or brakes, one hand may be touching the radio, and you may be thinking of something else all together. At the same time, you are breathing in and out and your heart is beating. These things happen quite automatically and easily ... and you are not even thinking about them. Just as you are driving the car without thinking about it (and even as you listen to me, your mind is working on several different levels) one part of your mind is listening to what I am saying and hearing every word that I say, yet another part of your mind may be focusing on how relaxed you are or perhaps drifting off in a way so that it seems that you are having no thoughts at all.

It really doesn't matter what you are thinking about now, or a few seconds from now. What is very true

is that some thoughts and experiences are central to your present experience, they are in the front of your mind and awareness ... and others fall somewhere in the background. Some are so far in the background that you hardly notice them at all, and in fact it can take a lot of effort just to be aware of them. But you do not have to make that effort ... these other experiences can stay right back there in the back of your mind And the same can be very true of pain. You may have experienced going to a hotel room with a noisy road close by, or going camping with a rushing river close by. At first you really notice these distractions, but with time, the noises seem to fall into the background of your awareness. They are there, but you just can't help but to think of other things. We can't really hold any thought or experience in our mind forever. Whatever we are thinking eventually gives rise to something else. But the interesting thing is that what takes the place of those things for you is going to be something far more interesting, far more pleasant and far more comfortable than you might ever have imagined

Suggestions for time distortion (can be useful for patients who are or who will be undergoing medical procedures, for limiting the perceived time of those procedures).

For acute pain:

Wouldn't it be interesting to find that you are able to change the time that you feel you are in chemotherapy? You may find that a 10 minute procedure seems to last 5 minutes or a 30 minute procedure lasts only 15 minutes. Perhaps a minute will only seem to last a matter of seconds, or an hour will really feel like a matter of minutes. Perhaps you will find yourself pleasantly surprised that you find yourself reflecting after the procedure that it really seemed to take no time at all. In any case, I think you will find that the time will seem to move by so much more quickly and comfortably than you ever might have guessed. You might even be picturing yourself in the future, feeling so good about how quickly it all seemed to go by

For chronic pain:

At some point in the future, it may be hours from now, or even days from now, I don't really know when, but at some point in the future, you will start thinking about time. And what you will notice is that the amount of time that you have felt any

discomfort has changed. Whereas it may have once felt as if you were uncomfortable for [an hour/several hours/most of the day], you can now look back and be pleasantly surprised that this has changed. You may look back and realize that the amount of time you were uncomfortable was really only half that time. One hour can turn into a few minutes ... several hours into only one hour. Or maybe, and wouldn't this be very interesting ... and pleasant ... you will look back and the amount of time that you were uncomfortable only feels like a few seconds. It doesn't matter how long you used to think you were uncomfortable ... what is important is that you will notice a change, a change that will continue to occur with time.

Suggestions for pain displacement (can be useful for patients with acute or chronic pain; tends to be more effective among patients who score higher on measures of general hypnotizability).

Right now, and for some time, you have been experiencing discomfort in your right hand. We both know that this has not been something that you have been very happy with, and that you would like to change. I wonder if you have ever thought about the experience of having that discomfort in a different part of your body. You may not have, because it doesn't make much sense, does it? Why should you feel uncomfortable in your right arm when the discomfort has been in your right hand? Or why should you feel uncomfortable in your left hand ... when it was once in your right hand? If you really think about it, however, the experience of pain is never consistent or stable. It never really remains in the same place ... for the same amount of time ... at the same intensity. It is always changing ... sometimes slowly, sometimes surprisingly fast. And perhaps what you will notice now, right now ... is that any discomfort you used to experience in your right hand is starting to change ... change even more than it usually does. This time it is moving up your arm, or into your shoulder. It may be that it is moving all the way into your left hand, or even somewhere else. Somewhere where it really does not bother you half as much ... a quarter as much. It is important to realize that the discomfort never stays in one place, and as you find it moving easily into your arm or your leg or your stomach, you find that it bothers you less. For just as you can move your pain, you can also control how much it bothers you.

Suggestions to focus on, and then change, sensations (can be used to increase focused attention and ability to alter specific sensations; tends to be more effective among patients who cope with pain and anxiety by sensitizing).

Right now, you are experiencing the discomfort in your back. Often, you might have heard people tell you to ignore it, and this can make sense for some people, sometimes. But this time, I want you to do something quite different. I want you to focus on the discomfort and think about it. I want you to tell me what color it is, how big it is and how much water it would hold. Think about this very carefully and watch this discomfort ... see what happens to it ... maybe you have not noticed many changes at all ... but, as you focus on the discomfort, notice what color it is now. Is it the same color as before? How big is it? How much water does it hold? Notice too what the true sensation is that you are experiencing. Notice too that these sensations are not good or bad. They just are. They can change, but also, how you feel about these sensations can change. As you become more, and more, absorbed in your experience of all sensations ... you can notice that these sensations can start to have a more friendly quality ... an interesting quality. We talk about discomfort, but we are really talking about sensations, pressure, heat, tingling. Sometimes, at least in the past, they were unpleasant ... but they do not have to be. Tell me what are you experiencing? What is this experiencing changing into?

Suggestions for sensation alteration (can be useful for patients with acute or chronic pain; tends to be more effective among patients who score higher on measures of hypnotizability; see also suggestions to focus on, and then change, sensations, above).

As you may know, one way that many people manage unpleasant sensations and feel more comfortable, is to substitute a different feeling, such as numbness or warmth, or tingling or pressure, for any unpleasant sensations. As you consider this, you may already be feeling different sensations—sensations that slowly and easily take the place of any uncomfortable feelings. You may have already noticed different feelings, such as numbness, warmth, or a tingling ... where there used to be uncomfortable feelings. As you continue, you can notice these new and different, feelings grow; notice how natural it is to be more aware of these feelings.

Right now, your nerves are sending all kinds of interesting feelings to your brain all the time, and your brain can learn to filter out the uncomfortable feelings. You can become more aware of these new more comfortable feelings. You can notice how you are more aware of other feelings in the areas that used to be (or, are sometimes) uncomfortable As you pay attention, more and more, you can start to notice interesting feelings like numbness, warmth, tingling or even pressure in the areas that used to be uncomfortable. And now you can relax further and allow these other feelings to grow, to expand, to take up more and more of your attention, so that your mind is less and less able to notice or even be aware of any uncomfortable feelings. You might find yourself noticing other interesting feelings. For example, I wonder if you might be curious about how absorbed you can become in noticing a feeling of numbness ... or tingling ... pressure ... or whatever feeling you may notice. What a relief to replace discomfort by being more and more aware of these other sensations and feelings.

Suggestions for decreased pain (can be used by any patient experiencing pain).

You may also be surprised that it's so much easier now to simply not notice uncomfortable feelings, to simply not pay attention to anything other than your comfort So much easier to enjoy the relaxing, peaceful comfort of each breath. So simple, so natural, to attend to your breathing And as we continue, you can enjoy discovering that those uncomfortable feelings just seem somehow to change. With every breath you take, you can notice how those feelings seem to become less and less clear, less and less strong ... as if they are becoming farther and farther away ... or smaller and smaller ... taking up less and less space in your awareness. Of course, if there is any change in these feelings, any new feelings of discomfort that might reflect a change in your health condition, your mind can note this, and you will therefore be able to take care of your health as needed and appropriate. But any old, chronic discomforts can fade away, become less as less strong. You can picture putting these feelings in a box, and then putting this box in another box, and then putting this box in yet another box, and placing that box in a room down a long hallway. So that even if you are aware of these sensations at some level, it is almost as if they are buried ... far away ... so easy to ignore. It's so easy

to feel the comfort of every breath. So easy to let yourself daydream about a pleasant place, to remember a happy time in your life or to imagine a happy time you'd like to have in your life. Letting yourself feel free, right now, to just let your mind wander ... to wander over pleasant memories or to wander over a pleasing image of something you'd like in your life right now. You might remember walking along a beach, the warmth of the sun on your face, a cool breeze, feeling so happy and at ease Maybe, if you listen, you can even hear the sound of a bird flying past ... or listen for the rhythmic, reassuring sound of the surf. Such a pleasure to be here, with nothing to bother you and nothing to disturb you. With every breath you take, breathing comfort in and discomfort out, just notice how naturally you feel more and more comfort. Let each breath you take ... contribute to your comfort and well-being. As you breathe, and as you notice the sensations of each breath, notice, too, that any remaining uncomfortable feelings are less and less clear, less and less strong ... as if they are becoming farther and farther away ... or smaller and smaller, taking up less and less space in your awareness. As if you realize that they're really not important. Not worth paying attention to.

Suggestions for hypnotic anesthesia (can be offered to any patient experiencing pain).

As you may know ... an anesthetic is a powerful medicine used by doctors to eliminate awareness of uncomfortable feelings. We are now going to use your imagination to anesthetize any areas that might be uncomfortable. Now imagine any areas of discomfort being completely filled by a feeling of anesthesia ... a pleasant sensation of comfort ... picture these feelings spreading through that area. Notice how naturally, how easily, the anesthesia can make those areas feel curiously different and pleasantly tingly. Notice how easily you can feel those tingly sensations just wash over everything. Notice how the tingly, numb sensations absorb and block out any discomfort. Such a pleasure to be able to imagine, to really imagine ... to make real ... such comfort. Any discomfort becoming less and less. The powerful, and **long-lasting** anesthetic is doing its job. Making you comfortable. This anesthetic has such positive effects ... greater comfort ... a sense of calmness and of confidence ... and it can last for hours ... and, won't you be surprised? ... even days. As you gain more experience, this

anesthetic becomes more powerful and effective ... and can last for as long as you need.

Suggestions for distraction using ‘safe place’ imagery (like most hypnotic suggestions, this can also be used as part of an induction).

And you can imagine yourself in a place that is safe, all by yourself, or with someone else, whatever is needed for this place to be safe, comforting ... and interesting. This place might be somewhere you have been before and know well ... you can recognize all of the familiar sights, sounds and smells ... or it might be a completely new place ... a place that exists in your imagination ... yet it feels so real ... you can really imagine yourself there ... so comfortable, no one can bother you ... it is like a vacation ... and in this place you are so absorbed by what you can see ... the colors ... the sounds..., and it is so comfortable for your body ... just the right temperature ... that you are actually feeling more and comfortable ... and this place is so absorbing, so interesting, and so ... comfortable, that you hardly notice any other sensations ... except maybe the perfect temperature of this place ... and how good you feel, inside and out

Suggestions for decreased pain unpleasantness.

As you sink deeper into comfort, you can be aware of just how well you can feel, with nothing to bother you, and nothing to disturb you. You are training your nervous system so that it is possible to be aware of a painful sensation, but not be bothered by it. Maybe it helps to remember that these sensations aren't really important. They don't really mean you need to do anything. These sensations aren't warnings, they're almost like old habits of your mind. You really don't need to pay attention to them, and you certainly don't need to feel bothered by them As you focus on this, notice that the sensations that you experience really do feel less and less important. Even if you feel them, you can feel less and less concerned about them ... now you know that they are nothing to worry about. It's just so satisfying to notice that, for some reason, all the sensations you can feel, all the feelings you can notice, become more and more a part of your experience of comfort and well-being, with nothing to bother you and nothing to disturb you Your sense of comfort can grow, so that you can be aware of how much better you can feel now ... and in the future There are no feelings to bother you or to disturb you.

Post-hypnotic suggestions for self-hypnosis and for maintenance of benefits (can be used at the end of a hypnotic treatment session or practice audiotape/CD to increase the length of time that treatment benefits will last).

Now we can begin to extend any comfort you have gained in this session into your daily life. Begin by taking a deep, comfortable, relaxing breath and hold it ... hold it for a moment ... and then let it all the way out. That's right Really feel the sensations of each breath. Notice that breathing in feels different than breathing out. Now, I'd like you to imagine something with me. Imagine that you are breathing comfort in each time you breathe in ... breathing actual comfort, each time you breathe in ... and imagine you are breathing tension or discomfort out each time you breathe out. As you do so, maybe you already notice a feeling of comfort washing over you, like warm water in a bath. any time you would like to feel more comfortable, any time later today, tomorrow or any other time you want to feel more comfortable, all you have to do is take a very deep, very satisfying breath and hold it ... hold it ... and then, as you let it all the way out ... let your eyelids close and focus on your breathing. Breathe comfort in and tension out, with each breath you take. Really focus your mind on each breath, and let each breath contribute to your comfort. With each breath you take, you can feel yourself filling your awareness with more and more comfort. Remember, any time you want to feel more comfortable, just rest back and take a very deep, very satisfying breath, and hold it ... and then, as you let it all the way out ... let your eyelids close and focus on your breathing. Breathe comfort in, and tension out with each breath you take. Really focus your mind on each breath. Let each breath contribute to your comfort. With each breath you take, you can feel yourself filling your awareness with more and more comfort. And this comfort is yours ... to keep with you, wherever you are, whatever you are doing. when you need to end the experience, you'll find that you're sitting up automatically, your eyes are open, your mind is clear and alert ... yet the comfort remains with you. No matter how clear and alert your mind remains, this inner comfort, this inner sense of ease, can remain with you and grow. Because this is your experience. And you can have it whenever you need. The more you practice this, the easier it will

be to keep the comfort with you. You may choose to practice for a minute or two every hour, or for several minutes a few times a day. I don't know how you will choose to do it, but the more you practice, the better you will feel, and the more your mind will be able to use these skills, automatically, throughout the day, so that you can feel more and more comfortable.

Suggestions for lifestyle changes (can be used for patients with chronic pain when you determine that making lifestyle changes will benefit the patient and his or her ability to manage pain).

As I continue talking, I want to remind you that you have a part of you mind that is a tremendous friend to you, an incredible resource to you. You may not be aware that this part of your mind is there or available to you, but it is there, it is always there. It is your internal friend that allows you to breath without thinking about it, and allows your heart to beat without giving it a thought. It is also the part of you that knows how to react without thinking, to do what is best and right for you. Right now, I want to talk to that part of you while perhaps the rest of your mind drifts off comfortably, or even listens in the background. You have had a problem that has bothered you for some time now, a problem that at times maybe seemed impossible to manage. Yet we have all had the experience in our lives of having a problem that seemed impossible to solve, and yet, one day the solution comes to us so easily, so effortlessly, and it very well may be that deep down you know exactly what it will take for you to feel more comfortable. And to tell you the truth, I don't know what exactly that change is for you. It may be that it comes to you that changing how you think about this problem will make a huge difference in your life. Or maybe what you do to manage it. You might find yourself doing something, anything, a lot of things, to make yourself stronger ... knowing that strong muscles hurt less, or you might start stretching your muscles and tendons every day, knowing that muscles and tendons that are flexible hurt less. You may make it possible to attend sessions with a physical therapist, or a yoga instructor or at your health club in an effortless way. It may be that you find yourself walking daily. I don't know. I do know that you will start moving in some way that will seem so natural, and almost effortless, and you can feel proud of yourself for making changes, for trying something

different, to better manage your health, so that you will feel better, and better, and better ... [the focus on increasing exercise is the example used here but changing cognitions, diet, alcohol use, pain medication use or gaining an increased sense of spirituality are all possible suggestions that could be integrated into this framework].

Age regression and progression (can be used to assist patients with chronic pain imagine themselves as pain-free, giving them an experience that they can replicate in their daily life). The following suggestion is adapted from one presented during a workshop by Steve Gilligan, PhD.

And as you sit here comfortably listening to my voice, I want you to picture five crystal balls or spheres in front of you, extending from the lower left corner of your visual field, and rising up as an arc in front of you, and then curving down to the right, like a rainbow. The two crystal balls in the left side of your field of view curving up will contain images from your life that have been in the past. The middle ball, at the top of the arc, will represent the present, and the two balls to the right of your visual field curving down will represent the future. I want you to focus now on the crystal ball in the lower left quadrant of your visual field. In that sphere, you will see an image of yourself sometime in the past before you developed any pain problem. When you were healthy, strong and confident in your body. This could be days, weeks, months or even years ago. This can be a symbol that represents a younger you, an image or picture of yourself, or even a memory or a feeling. However you experience it is fine. As long as it is some time in the past and is when you did not experience the pain you have reported to me. Now, in the next sphere, I want you to put a more recent image, symbol or feeling. But one that is still in the past. In this image, memory or feeling, you are still pain free. It is an image in the past but more recent than the first sphere you just were looking at.

You now look at the sphere at the top of the arc, this represents the present. In this ball you see yourself today. It is [give year, day and time]. You are [give location]. Look at yourself and what you are experiencing right now. Now, we are going to move along the arc to the fourth out of five spheres. The one is in the upper right quadrant of your visual field. In this sphere you will see an image, symbol or

have a feeling of yourself sometime in the future. It could be minutes, hours, days, weeks or years from now. But the image will be of you being hardly aware of any discomfort ... almost pain free, moving comfortably and feeling confident, happy, strong ... very, very well. Finally, you will now move to the fifth sphere in the lower right section of your visual field. In this ball, you see yourself even further in the future. You are still hardly aware of any pain, moving comfortably and feeling very, very well. You have reached some important goals, and feel that your life is on track, Good, I want you to now to look at all five crystal balls and to see the images in each one. Just notice what is there. It does not matter if the images change. Now, as you look at the five crystal balls, you will find a bright light connecting the five spheres. Just notice the bright light connecting the images and you experience a deep sense of them connecting.

Metaphors for pain relief (metaphors can be helpful for patients who might experience acute or chronic pain; their content depends to a large extent on the creative ability of the therapist to match the content to the patient's needs; we offer the following as merely an example).

... and now I am going to tell you something about a close friend of mine that you might find very interesting ... this friend grew up with many brothers and sisters, ten in all ... this made for a very interesting childhood ... for one thing, he learned that he needed to eat very quickly if he was going to get enough to eat during a meal. And he still eats quickly to this day ... but what he really remembers is ... the noise. You cannot believe how much noise there is in a house with 11 children. The TV was always on ... and sometimes, it was LOUD ... the stereo seemed to be always playing ... kids were

sometime yelling and fighting, babies crying, and then his mom seemed to be yelling all of the time just to get their attention The noise was constant, it was always there ... sometimes it was really, really bad. At times ... he did not feel like he could do anything but think about the noise. Sometimes it was there but not quite as bad It really used to bother him ... and he did not know what he could do to escape ... to really experience quiet ... he would try yelling at his brothers and sisters to try to keep them quiet, but this just annoyed them and contributed to the noise ... he even tried earplugs ... at times he felt like giving up ... as if it would never get better And then one day, when he started to get older and more experienced ... and for a reason that he could not explain ... the noise stopped bothering him.... It is not that it went away.... It is not as if anything changed ... *it just stopped bothering him*. And when that happened, he felt ... better ... more energetic ... like he could now focus his attention on what was important ... it is like when you are trying to solve a math problem and suddenly the solution just comes to you ... without knowing where it came from. It reminds me of being on an airplane when I was younger and being bothered by babies crying ... then, after having my own children, the babies crying just didn't seem to bother me anymore.... And this is interesting as well ... in order for my friend to focus (he is now a successful scientist) ... he needs at least some noise. We works with the stereo on ... he does chores with the TV or stereo on ... and he tells me that he hardly notices the noise ... but that when things are completely quiet, he becomes distracted....it is as if it is easier for him to concentrate ... to do what he needs to do, with some noise in the background ... it is almost, now, a comfort to him....

CHAPTER 21

Hypnosis and anxiety: early interventions

Richard A. Bryant

21.1. Introduction

Anxiety can be defined as a fear that persists even when a salient threat is not present. The most common anxiety disorders, as defined by the ‘Diagnostic and Statistical Manual of Mental Disorder’ (American Psychiatric Association, 1994), are specific phobia, social phobia, generalized anxiety disorder, obsessive-compulsive disorder, post-traumatic stress disorder (PTSD), acute stress disorder and separation anxiety disorder.

Prevailing models of anxiety draw on fear conditioning to explain the acquisition and maintenance of anxiety. Evolving from early behaviorist views of classical conditioning, these models posit that exposure to an aversive event (unconditioned stimulus) leads to a strong fear reaction (unconditioned response), which becomes conditioned to many stimuli associated with the initial aversive experience (Charney *et al.*, 1993). Accordingly, when people are exposed to reminders of the experience (conditioned stimuli), they experience a strong fear reaction (conditioned response). For example, an individual may have an initial attack while riding on a bus. The bus may become associated with the aversive experience of having the panic attack, and subsequently all associations with the bus come to trigger the perceived danger of panic. Each time the person

enters a bus, they perceive the danger signals, which will often then elicit the panic. Subsequent avoidance of all reminders of the bus will serve to reinforce the fear because the person cannot learn that the bus itself is not dangerous.

One of the major models of anxiety reduction involves extinction learning. Extinction learning involves being exposed to the reminders of the anxiety but in the presence of any aversive outcome, and in this way one engages in new learning that inhibits the initial fear response. Many theorists have noted that successful treatment of an anxiety disorder can be conceptualized as extinction learning because the individual learns to feel safe in the presence of the triggers that cause an anxious reaction (i.e. the conditioned stimuli) (Davis and Myers, 2002). For example, eliciting panic symptoms (e.g. rapid breathing, pumping heart) by requiring a person to hyperventilate can lead to the person learning that they did not die or have a heart attack. Further, by requiring the person to have arousal symptoms in the bus, they can learn that the bus is a safe place and they can engage in new learning that arousal symptoms in the bus are not harmful.

21.2. Hypnotizability and anxiety

There is convergent evidence that people with anxiety disorders are characterized by increased

levels of hypnotizability. For example, elevated hypnotizability has been observed in PTSD (Stuntman and Bliss, 1985; Spiegel *et al.*, 1988), acute stress disorder (Bryant *et al.*, 2003a), phobias (Frankel and Orne, 1976; John *et al.*, 1983), as well as disorders that involve anxiety components, such as dissociative identity disorder (Spiegel, 1984; Carlson and Putnam, 1989) and bulimia nervosa (Covino *et al.*, 1994). Some studies have found that patients with multiple anxiety disorders are more hypnotizable than those with a single phobia (Frankel and Orne, 1976). Interestingly, one study found that hypnotizability altered following treatment of PTSD, with increased hypnotizability being associated with elevated avoidance responses after treatment (Bryant *et al.*, 2003b).

Why would more anxious individuals be more hypnotizable? Several explanations can be entertained. One argument suggests that conditioning is stronger in people with higher imagery skills (Dadds *et al.*, 1997). There is evidence that higher levels of hypnotizability are associated with increased imagery ability (Glisky *et al.*, 1991). Highly hypnotizable people (who have greater imagery skills) may be more likely to engage in fear conditioning when they experience an anxiety state, and consequently they develop an anxiety disorder.

Some anxiety disorders involve dissociative states. For example, panic attacks involve dissociative experiences, such as derealization and depersonalization (Krystal *et al.*, 1991). A predisposition to dissociation, which may involve higher levels of hypnotizability, may contribute to development of anxiety disorders. Relatedly, diathesis-stress models suggest that people who have a predisposition towards dissociation may respond to stressful life events in a way that encompasses dissociative responses (Kihlstrom *et al.*, 1994; Butler *et al.*, 1996). Although hypnotizability cannot be equated with dissociation, it may reflect cognitive processes that may be associated, albeit indirectly, with dissociative mechanisms observed in anxiety responses (Roche and McConkey, 1990). It is possible that those with dissociative tendencies respond to stress in ways that lead them to anxiety conditions that involve some dissociative components.

Another possible explanation is that a common pathway may be responsible for both anxiety and hypnotizability. Sandberg and Lynn (1992) have argued that children who suffer adverse childhood experiences tend to respond to these experiences by retreating into fantasy, and accordingly develop a greater capacity for fantasy-proneness, absorption and hypnotizability. In this way, anxious individuals may have greater hypnotizability because of their tendency to engage in fantasy to a greater degree during childhood. Finally, there is evidence that highly hypnotizable people have more unwanted intrusive thoughts than low hypnotizables (Bryant and Idey, 2001). All anxiety disorders are characterized by intrusive thoughts. It is possible that the documented capacity of highly hypnotizable individuals to engage in daydreaming and fantasy (Wilson and Barber, 1983; Lynn and Rhue, 1988), to engage in divided attention (Hilgard, 1986; Crawford *et al.*, 1993) and to attribute involuntariness to internal experiences (Kirsch and Lynn, 1999) may cause highly hypnotizable individuals to be more prone to anxiety because of a difficulty in controlling unwanted anxiety-provoking thoughts.

We should be cautious in presuming the strength of an association between hypnotizability and anxiety. Much evidence indicates that hypnotic responding is influenced by contextual factors (Council *et al.*, 1986). Much of our evidence of an association between anxiety and hypnotizability comes from studies that have administered a standard hypnotizability test in the same context as questioning the participant about anxiety symptoms. It is possible that a proportion of patients perceived questions about the anxiety disorder in a way that cued them to respond positively to the hypnotic testing. This possibility is consistent with evidence that because highly hypnotizable individuals are particularly suggestible, they may be more prone to suggestions that they experience particular symptoms (Bowers, 1991). It should also be noted that not all studies find elevated hypnotizability in anxiety populations (Frischolz *et al.*, 1982; Owens *et al.*, 1989). Further, some of the studies of hypnotizability in anxiety disorders have been potentially flawed by small sample sizes and self-selective recruitment procedures that may bias the results.

21.3. Hypnotizability and treatment response

There is also some evidence that treatment response is associated with hypnotizability levels. A number of studies have reported that anxiety symptom reduction is associated with higher levels of hypnotizability. Spiegel and colleagues (1981) reported that across a large case series of treating flying phobics, highly hypnotizable individuals were more likely to report positive response to treatment. Gerschman and colleagues (1987) reported a moderate correlation ($r = 0.54$) between hypnotizability and response to hypnotherapy in dental phobics. Horowitz (1970) reported a modest correlation ($r = 0.39$) between hypnotizability and treatment outcome in snake phobics treated with hypnosis. In contrast, Bryant and colleagues (2005) reported no correlation between treatment response and hypnotizability in patients with acute stress disorder treated with hypnosis and cognitive behavior therapy. Other studies have also reported no relationship between hypnotizability and treatment response (Wadden and Anderton, 1982). On a cautionary note, it should be recognized that some of this evidence comes from studies that did not conduct assessments of hypnotizability in a manner that was independent of the treatment provided, and it is very possible that experimenter bias influenced these results. Overall, the evidence for hypnotizability predicting treatment response is mixed across disorders, including anxiety disorders.

21.4. Evidence for hypnotherapy

There are many earlier reports in the literature of hypnotic techniques leading to reductions in anxiety (Bouton and Tosi, 1983; Stanton, 1992; for a review, see Flammer and Bongartz, 2003). There are several ways to consider the evidence for the efficacy of hypnosis in reducing anxiety disorders. One is to consider the treatment gains made by patients receiving hypnotherapy relative to those who receive no treatment. This is a flawed approach because there is overwhelming evidence that nonspecific therapy effects

typically lead to treatment gains, and so receiving any form of therapy is often helpful. Considering the overwhelming evidence that cognitive-behavioral therapy (CBT) is the treatment of choice for treating anxiety (Chambless and Hollon, 1998), the challenge for hypnosis is the extent to which it can build upon treatment provided by CBT. A meta-analysis of 18 studies that compared treatment of a range of psychological disorders (including anxiety) using CBT alone or CBT combined with hypnosis found that CBT supplemented by hypnosis led to more clinical gains than CBT alone (Kirsch *et al.*, 1995).

There are relatively few well-controlled studies on the relative efficacy of hypnotherapy for managing anxiety compared with CBT. Van Dyck and Spinhoven (1997) compared in vivo exposure versus exposure combined with hypnosis for treatment of agoraphobics with panic disorder. Patients were provided with one of the treatments and after 4 weeks provided with the other in a crossover design. Although this study found no difference between treatments, the design was flawed because all patients received both treatments. A study of public speaking anxiety provided patients with cognitive therapy and in vivo exposure, or these components with hypnosis (Schoenberger *et al.*, 1997). Both treatments performed better than a no-treatment control, and the hypnosis condition performed better than the CBT alone condition.

Two controlled studies have focused on post-traumatic stress. One earlier study compared the effectiveness of desensitization, hypnotherapy, psychodynamic therapy and a wait-list control group for post-traumatic stress (Brom *et al.*, 1989). Hypnotherapy was intended to facilitate emotional processing of trauma memories through behaviorally oriented strategies. This study found that all three active treatments were comparably effective. This study's conclusions were limited by (a) the lack of independent assessments; (2) inadequate specification about therapy components; and (3) the absence of independent treatment fidelity checks. A more recent study randomly allocated civilian trauma survivors ($n = 89$) with acute stress disorder to either CBT, CBT associated with hypnosis, or supportive counseling (Bryant *et al.*, 2005). This study added hypnosis to CBT because some

commentators have argued that hypnosis may breach dissociative symptoms that characterize acute stress disorder (Spiegel, 1996). To this end, the hypnosis component was provided immediately prior to imaginal exposure in an attempt to facilitate emotional processing of the trauma memories. In terms of treatment completers, more participants in the supportive counseling condition (57 percent) met PTSD criteria at 6-month follow-up than those in the CBT (21 percent) or CBT + hypnosis (22 percent) condition. Interestingly, participants in the CBT + hypnosis condition reported greater reduction of re-experiencing symptoms at post-treatment than those in the CBT condition. This finding suggests that hypnosis facilitated treatment gains associated with exposure in people with post-traumatic stress.

21.5. Hypnotic strategies for reducing anxiety

It is important to remember that hypnosis *per se* is not a therapy. It is a tool that can be used as an adjunct to established therapy techniques that have proven efficacy in reducing anxiety symptoms.

21.5.1. Muscle relaxation

Relaxation techniques are often used in anxiety management because they have the potential to reduce muscular tension and associated feelings of anxiety (Taylor, 1982). Common relaxation techniques include breathing control, progressive muscle relaxation, isometric muscle relaxation, and imagery to facilitate relaxation. Although the potency of relaxation techniques in actually reducing clinical anxiety is arguable, many clinicians provide relaxation because it can give a sense of self-mastery and symptom reduction, and may encourage compliance with therapy (Jackson, 1995). Hypnosis can facilitate the relaxation process by deepening the relaxation exercises that are embedded in the hypnotic induction, directing the individual to focus attention on the specific muscle groups or emotional responses that are being relaxed, and providing imagery to enhance the relaxation experience.

21.5.2. Imagery

Hypnosis permits subjectively compelling imagery that allows the individual to believe in the suggested experience (Sheehan and McConkey, 1982). Many clinicians use imagery to facilitate anxiety reduction in two ways. It is often used to facilitate relaxation because the hypnotist can suggest images that are inherently soothing and calm. For example, by previously identifying scenes that elicit safety and relaxation in an individual, one can increase the relaxation markedly in most people. For example, by suggesting that an individual is lying on a beach on a warm and calm day, and prompting the individual to notice easing of tension and anxiety symptoms, the hypnotist can rapidly elicit relaxation.

Imagery can also be very useful in exposure therapy, especially when the therapist is using imaginal forms of exposure. This technique is commonly used in treating anxiety-producing memories, images or thoughts. These symptoms are common in all anxiety conditions, and most prominent in PTSD, generalized anxiety disorder and obsessive-compulsive disorder. Imaginal exposure involves having the individual imagine their feared memory or worst imagined outcome of their feared situation, and then encouraging them to learn that their anxiety subsides while they continue to think of this event. This process leads to learning that the feared event is no longer threatening. Importantly, this learning is strongest when the anxiety that is initially experienced is intense because the subsequent decrease in anxiety strengthens the new learning of anxiety reduction (Foa and Kozak, 1986). The capacity of hypnosis to elicit vivid imagery and compelling absorption in internal experiences can usefully heighten the emotional engagement that the individual has in the anxiety-producing imagery, which in turn can lead to stronger learning that these mental events are no longer threatening. Hypnotic suggestions to engage in the imaginal or *in vivo* exposure, including suggestions to imagine the sensory, cognitive and emotional aspects of the experience in an intense manner, can enhance the exposure efficacy. It is for this reason that some commentators have argued that hypnotherapy is the

treatment of choice for some anxiety disorders because it specifically breaches obstacles to accessing anxiety-producing images or memories (Spiegel, 1996). Some studies have explicitly used hypnosis as an adjunct to exposure to facilitate the imagery and emotional engagement that anxious individuals experience during therapy (Bryant *et al.*, 2005).

21.5.3. Thought control

Intrusive thoughts are a hallmark of anxiety conditions (Clark, 2005). Much research has indicated that attempts to suppress thoughts typically result in an increase of the unwanted thought (Wenzlaff and Wegner, 2000). This pattern is also evident in anxious populations, such as acute stress disorder, PTSD and highly anxious individuals (Harvey and Bryant, 1998*a,b*; Tolin *et al.*, 2002). Highly hypnotizable individuals are better able to inhibit unwanted thoughts during hypnosis than low hypnotizables (Bryant and Wimalaweera, 2006). Considering the importance of thought intrusions in anxiety, clinicians should consider utilizing the cognitive capacity of highly hypnotizable individuals to use hypnosis to manage unwanted thoughts.

21.5.4. Post-hypnotic suggestions

Post-hypnotic suggestions can be used to shape an individual's behavior and experience after the therapeutic suggestion. Although there is little empirical support for the use of post-hypnotic suggestions in clinical settings, it is widely used in clinical settings (Yapko, 2003). Extrapolating from substantial experimental research allows for a degree of confidence in the capacity of post-hypnotic suggestion to influence behavior in the clinical setting (Barnier and McConkey, 1998*a,b*). Most post-hypnotic suggestions inform the hypnotized individual that they will experience a specific state or perform a certain behavior in situations outside the hypnosis setting. Post-hypnotic suggestions for an anxious individual can include suggestions to experience less anxiety during the daily routine, complete therapy homework, engage in coping strategies when distressed or notice adaptive appraisals during times of anxiety.

21.5.5. Motivational enhancement

Social psychological theories of hypnosis posit that the primary potency of the hypnotic context is the powerful motivation it elicits in the participant to comply with the hypnotist's requests (Spanos, 1986). In the clinical context, using hypnosis may increase the expectancy of success and also the extent to which the individual complies with any suggestions given by the hypnotist. Kirsch *et al.*'s (1995) meta-analysis found that CBT supplemented by hypnosis led to more clinical gains than CBT alone. Interestingly, scrutiny of the specific studies indicates that the CBT and CBT plus hypnosis treatments often did not differ much in terms of substantive content. Whereas CBT alone would provide relaxation training and imagery techniques, CBT combined with hypnosis often provided the same strategies but labeled the techniques as hypnotic. Adopting a social psychological interpretation, Kirsch *et al.* (1995) suggested that participants in many of these studies may have responded to therapy better when it was termed hypnotic because they were more motivated and expected a better response. The role of social influences on elevating the expectancy and motivation of hypnotized individuals is irrefutable and needs to be considered in terms of a possible means of enhancing treatment response.

21.5.6. Self-hypnosis and anxiety

All the aforementioned strategies can be implemented in the form of self-hypnosis. Self-hypnosis involves the administration of hypnotic suggestions through self-talk or listening to a recording of hypnotic suggestions. Orne and McConkey (1981) have argued that since it is primarily the ability of the individual, rather than the skill of the hypnotist, which determines whether a person responds to heterohypnosis, all hypnosis can be thought of as self-hypnosis. However, since the technique of self-hypnosis is typically taught initially in the context of a relationship with a hypnotist (even via audiorecording), it can be argued that self-hypnosis is simply a variant of heterohypnosis. The value of self-hypnosis is that suggestions can be transported to many suggestions where the individual is requiring assistance in managing anxiety.

21.6. Case study 1: PTSD

21.6.1. Background

Bart presented to the clinic following a sexual assault. He appeared as a highly distressed young man, who was reluctant to discuss his problems. Bart reported that 3 years earlier, he had been raped by two men after leaving a night club. He reports that the two men grabbed him as he left the club and took him to an isolated park, where they engaged in oral and anal sex. Bart reported that he was not gay, and he had found the experience so distressing that he had never discussed it with anyone. In terms of presenting problems, Bart reported that he suffered nightmares of the assault, intrusive memories, a fear of men that he does not know, avoidance of public places and of proximity to men, insomnia, irritability, poor concentration, hypervigilance to people who approach him, depression, social withdrawal and a fear of intimacy with women. Interestingly, Bart reported that some aspects of the assault were particularly distressing, and he was unable to report an entire section of the event, despite repeated prompting. He stated that he simply did not know what occurred at this time, even though he never lost consciousness throughout the ordeal. Notably, Bart reported his account of the assault in a detached manner that apparently lacked much of the affective tone that we expected in a case that was so threatening.

These problems satisfy the criteria for PTSD. He satisfied the criteria for Criterion A (Stressor) by being exposed to a threatening experience and responding with fear or helplessness. He satisfied Criterion B (Re-experiencing) by reporting nightmares and intrusive distressing memories of the assault. He met Criterion C (Avoidance) because he reported avoidance of talking or thinking about the event, avoided reminders of the assault, reported amnesia of some aspects of the experience and reported emotional numbing and social withdrawal. He met Criterion D (Hyperarousal) because he reported insomnia, irritability, poor concentration and hypervigilance.

21.6.2. Formulation

We understood Bart's presentation in the following way. The distress caused by the rape led

to a strong fear response in Bart, underpinned by strong noradrenergic activation that is known to exacerbate fear conditioning. The fear conditioning that occurred at the time of the trauma led to strong fear responses being elicited each time Bart was confronted by a reminder of the trauma. These reminders included being in public, seeing men, seeing his own body and his own bodily sensations; all these stimuli could trigger memories that were distressing and served to reconsolidate the memory of the traumatic experience. This level of fear conditioning resulted in Bart persistently feeling as if he was still under threat, and accordingly he continued to have insomnia, hypervigilance and poor concentration as a result of his elevated arousal. Bart responded to this distress by actively avoiding all potential reminders of the event. He would not speak or think about it, or go places where he may be reminded of men who could hurt him. Moreover, it seems that Bart engaged in passive avoidance as well, i.e. he limited the extent to which he felt aversive emotional responses by distancing himself from memories or emotions. This form of avoidance is not well understood, although there is increasing evidence that people with PTSD may have the capacity to avoid awareness of aversive experiences (Moulds and Bryant, 2002). Associated with this fear response, Bart has presented with a common set of appraisals about the event and himself that exaggerate his sense of vulnerability and his depressive response. It is very common for people with PTSD to exaggerate the likelihood of future harm, and to make maladaptive appraisals about themselves and their inability to cope after the trauma (Ehlers *et al.*, 1998; Warda and Bryant, 1998). For example, Bart reported that 'I should have been more of a man and stopped the attack', 'if I was a real man I would have got over it by now', 'I can never really feel safe again' and 'no woman is ever going to want me after this'. These appraisals have contributed markedly to Bart's low self-esteem, depression and perception of vulnerability.

21.6.3. Treatment plan

Based on our treatment formulation, treatment needs to achieve four basic goals. First, we need

to provide Bart with techniques to provide symptom relief from his elevated anxiety. Second, we need to reduce the anxiety that is repeatedly caused by memories and situations that trigger distress. Third, we need to identify and modify those maladaptive appraisals that are contributing to Bart's condition. Fourth, we need to encourage Bart to engage in positive and social experiences to reduce his depressive and socially withdrawn state.

The first goal will be achieved through anxiety management techniques that aim to provide coping skills to gain a sense of mastery over fear and to reduce arousal levels. Anxiety management approaches often include stress inoculation training that follows Meichenbaum's (1975) program of psychoeducation, relaxation skills, thought stopping and self-talk.

The second goal will be achieved through imaginal and *in vivo* exposure. Prolonged imaginal exposure requires the individual to imagine the trauma vividly for prolonged periods. The therapist assists the patient to provide a narrative of their traumatic experience in a way that emphasizes all relevant details, including sensory cues and affective responses. In an attempt to maximize the sense of reliving the experience, the individual may be asked to provide the narrative in the present tense, speak in the first person and ensure that there is focus on the most distressing aspects. Prolonged exposure typically occurs for at least 40 min, and is usually supplemented by daily homework exercises. To maximize the benefits of imaginal exposure, and especially in the case of Bart who avoids affective states associated with his memories, it is useful to conduct imaginal exposure in the context of hypnosis. Through hypnotic suggestion, Bart would be told to engage thoroughly in all his memories and emotions for the duration of the exposure. This approach would be particularly important for those components in which Bart is amnesic of the experience because he can be asked to reconstruct the experience in a fashion similar to age regression.

It is important to supplement imaginal exposure with *in vivo* exposure that involves live graded exposure to the feared stimuli. This is an important step because *in vivo* exposure intends to target phobic avoidance, and this needs to be structured in a way that all anxiety-provoking

situations (except unsafe ones) are eventually approached and mastered by the trauma survivor. In the case of Bart, there is a wide array of stimuli he is avoiding and will need to be targeted in an *in vivo* exposure paradigm.

The goal of correcting maladaptive appraisals is undertaken by implementing cognitive therapy. Cognitive models of PTSD posit that resolution of PTSD requires the integration of corrective information (Foa and Kozak, 1986). Cognitive restructuring involves teaching patients to identify and evaluate the evidence for negative automatic thoughts, as well as helping patients to evaluate their beliefs about the trauma, the self, the world and the future (Ehlers and Clark, 2000). Targeting appraisals is particularly important following sexual assault because issues of guilt, shame and vulnerability commonly contribute to ongoing PTSD and depression (Resick and Schicke, 1993).

The final goal of developing strategies for increasing Bart's social activity and exposure to positive events is achieved through positive event scheduling, and especially targeting social activities. The 3 years that Bart has spent avoiding social events has reinforced his belief that he cannot function socially and that social settings cannot provide him with any pleasure. Through structured programs that require him to engage in positive social events, he will be increasingly integrated into social networks that will both reduce his depression and counter his beliefs that social networks are dangerous.

21.6.4. Treatment

Therapy commences with education that highlights the hallmark symptoms of the post-trauma response and discusses the way in which the core symptoms will be treated during the course of therapy. The aim is to legitimize the trauma reactions, to help the patient develop a formulation of their symptoms and to establish a rationale for treatment and a clear rationale about each therapy component. Ensuring that the patient understands the rationale is imperative because it underscores commitment to therapy demands.

We commence therapy with anxiety management techniques. This component neatly complements the introduction of hypnosis into

therapy because anxiety management techniques overlap significantly with normal hypnotic inductions. Prior to conducting hypnosis, it was important to clarify with Bart any concerns he had about the hypnotic procedure. A core concern of many trauma survivors is the control that they have lost during the trauma, and it is important that they feel that they have control during therapy. As some people believe that hypnosis involves a surrendering of control to the hypnotist, we commenced with clarifying with Bart that he is always in control. This control can take many forms; because he was blindfolded during his rape, Bart wanted to keep his eyes open throughout hypnosis to ensure he was in control. We administered a standard eye-fixation induction, followed by deepening suggestions, and suggestions that he could experience deeper muscle relaxation. We had previously agreed with Bart that a safe scene for him was at his father's beach house. Accordingly, we suggested to Bart that whenever he needed to feel more relaxed, he could think of himself at the beach house and could experience a sense of safety and relaxation. Post-hypnotic suggestions were also used to suggest that after therapy sessions, he may unexpectedly notice feeling more relaxed. Importantly, suggestions were also given to Bart that if any unwanted thoughts popped into his mind, he could simply notice these thoughts and allow them to pass. People with PTSD can be disturbed by trauma memories during relaxation exercises, and it is useful to normalize this occurrence and to encourage people to observe these thoughts and move onto other thoughts.

We then commenced exposure therapy with Bart by requiring him to provide us with a narrative of his trauma experience. During hypnosis, Bart was asked to relive the assault in detail. Bart understandably found this very distressing, especially since he had never discussed the event with anyone. To track the distress Bart was feeling during the exposure, we asked him regularly to provide a rating of his distress on a scale of 1 ('no distress') to 100 ('extreme distress') at different times during the narrative. Bart narrated his trauma successfully but continued to omit a segment of the assault of which he was amnesic. It is possible, though not always the case, that not administering exposure to aspects

of the narrative that are avoided may lead to relapse because these aspects are often of utmost importance. Accordingly, we administered an age regression suggestion to Bart that suggested that he could see everything that occurred. We commenced with the last thing that he could recall, which was one of the assailants telling Bart that he had to kiss the assailant while he looked into his eyes. Bart could not recall anything after that until he realized that he was lying naked on the ground with both men sitting nearby drinking beer and laughing. In the age regression, Bart was asked to return to the narrative of the assault, and at the point when the assailant said Bart was to kiss him, we asked Bart to slow the scene down and see what was happening from the safety of the other side of the park. We adopted this strategy because Bart expressed much trepidation about understanding this aspect of the assault and we believed that perceiving that there was some distance between himself and the event might facilitate the reliving. Bart accepted this strategy and told us about the events that occurred during this period. Once he began talking about these events, we required him slowly to focus on them and to engage in all the emotional and cognitive responses that he experienced during this period. We continued this focus for 40 min to ensure that he could experience mastery of these memories. At the end of this session, we also administered post-hypnotic suggestions that he would feel better about himself and his capacity to cope because he had been able to master these memories. We required Bart to practice this hypnotic exposure exercise each day for homework between therapy sessions.

We then proceeded with *in vivo* exposure that required Bart to develop a hierarchy of feared situations that he was avoiding. These ranged from lowest to highest: going out to a shopping mall with friends, going out to a mall with one friend, going for a walk during the day with a friend, going for a walk in the day by himself, walking with a friend at night, walking by himself at night, asking a male he did not know for directions, attending a night club with friends and, finally, attending a night club by himself. Bart was required to remain in each situation until his distress reduced by 50 percent, and we asked him to repeat each situation successfully

three times before progressing to the next level. We also provided post-hypnotic suggestions during therapy that instructed him to notice his mastery of these situations and his capacity to cope. We also built in suggestions that he did not need supports to maintain his safety. We did this because, like many trauma survivors, Bart maintained safety behaviors to decrease the likelihood of future harm. For example, he always carried a knife and mace spray. These sorts of behaviors limit the benefit of *in vivo* exposure because they deprive the patient of the opportunity of learning that their sense of safety is associated with the previously feared situation rather than their safety behavior.

Cognitive therapy focused on Bart's beliefs that he was at fault for not preventing the assault and that he was inadequate for not coping more effectively. Cognitive therapy works most effectively when the individual can contrast their maladaptive appraisals with compelling experiences that are reality based and undermine their unhelpful thoughts. To this end, we identified the most unhelpful appraisals reported by Bart, and subsequently during hypnosis asked him to imagine vividly scenarios that contradicted his beliefs. For example, when Bart reported that he felt he was responsible for the assault, we asked him to visualize what would have occurred if (1) a friend of his had been the victim; (2) if he had tried different strategies to protect himself; and (3) what he would say to a friend if he was blaming himself for this assault. These are normal cognitive strategies but, by asking Bart to visualize them during hypnosis, and then reaffirming his interpretation in the light of his imagined scenarios, it strengthens the learning in these new appraisals. In this case, Bart was able to conclude that none of his friends could have prevented the assault, that by actively protesting against the assault he might have been killed, and that he would definitely try to reassure any friend of his that they were not to blame.

The final focus of therapy was to try to build up social and positive experiences that Bart was exposed to. We developed a positive event schedule that was integrated into his *in vivo* exposure, and Bart was required regularly to engage in activities that he had been avoiding for 3 years. For example, he was required

to recommence playing football, attending clubs, seeing movies, meeting with friends and socializing with women. During hypnosis, and supplemented by post-hypnotic suggestions, Bart was directed to imagine himself in these situations and feeling safe, happy and strong while he engaged in these pleasurable activities.

21.6.5. Outcome

Bart commenced therapy with much fear about his capacity to cope with his trauma memories. Despite this fear, he responded well to the initial hypnosis exercises because he found much symptom relief in imagining feeling safe and relaxed in his favorite place. Although he wished to persist with this stage of therapy, we insisted on progressing with exposure because of overwhelming evidence that this is the most efficacious component of CBT. Bart was visibly distressed throughout the initial exposure sessions, but we encouraged him to persist. He failed to show any reduction in distress until we focused his attention on the 'forgotten' aspects of the assaults. After his exposure session focused on those aspects, Bart experienced even higher levels of distress followed by a sharp reduction in distress. At that point he became more compliant with homework exercises, and reported a marked reduction in symptoms. Over the following weeks, Bart reported fewer nightmares, memories and depression. He also became more compliant at this point with his *in vivo* exposure exercises. Bart became more optimistic about his future, and this assisted his use of cognitive therapy because he recognized that some of previously held beliefs were not justified. The more he socialized and approached previously avoided situations, the more he was able to challenge erroneous appraisals. After 12 sessions of therapy, Bart was reporting few PTSD and depression symptoms.

21.7. Case study 2: fear of heights

21.7.1. Background

Lisa reported to a mental health clinic that she was distressed by a fear of flying. On presentation, she stated that she had feared heights for as

long as she could remember. She stated that she feared going up on elevators, being at cliff tops or look-outs, looking out from tall buildings and flying. Lisa reported that she wanted treatment at the current time because her fear of flying was preventing her from pursuing her career in sales. She declined several promotions because the new positions would have required flying regularly.

Lisa's symptoms suggested that she suffered specific phobia for heights. She regularly avoided height situations. When she was confronted with heights, she typically suffered panic attacks, including constriction of the chest, difficulty breathing and sweating. She had an immediate need to escape the high situation, after which time she experienced immediate relief.

21.7.2. Treatment plan

Treatment needed to ensure that Lisa was able to master height situations in a graded way that allowed her to experience anxiety reduction whilst still in the situation. This treatment required two stages. First, we assisted Lisa to develop a hierarchy of feared situations that elicited anxiety. These ranged from situations that elicited minimal anxiety to those that were most fearful. As our plan was to ensure that Lisa could gradually master each step on the hierarchy, we wanted 10 steps on the hierarchy to allow her ample opportunity to make graded exposures that were achievable. The second goal was to implement the graded exposure by having Lisa enter the feared situations, and remain there until her anxiety subsided. His plan was influenced largely by Lisa's report that she would find it very difficult to enter these situations. Further, Lisa admitted that her major fear was flying, and that it was difficult to implement this into an exposure hierarchy because she rarely has the opportunity to fly.

21.7.3. Treatment

Therapy commenced with the development of the hierarchy. It comprised the following 10 steps that commenced with riding up one floor of an elevator with a friend; then progressively riding up two, three and five flights by herself; then standing next to a window of a skyscraper with a friend; then doing it by herself;

then going to the airport and watching planes taking off with a friend; then repeating it by herself; then finally taking a flight.

A major issue in her treatment was her fear of approaching any flights. Lisa had demonstrated at an initial session that she was adept at hypnosis. Accordingly, prior to commencing the graded exposure, we commenced an imaginal exposure program in which Lisa imagined during hypnosis that she was entering the feared situations. A brief hypnotic induction was administered, followed by detailed suggestions that she was entering the feared situation. It was essential to obtain clear details from Lisa about each scenario, as well as her cognitive, physical and emotional reactions to being in the scene prior to the imaginal exposure. The hypnotic suggestion directed her to be aware of her panic responses and her feared outcomes (e.g. suffocating in the elevator), with the goal of increasing her anxiety and distress. She was instructed to remain with these scenes, and to notice that her anxiety was reducing as time passed. Although some hypnosis work tries to counter the anxiety by replacing the feared images with pleasant or safe images, this approach was not indicated for Lisa. It was important for her to learn through hypnosis that (1) the feared outcomes would not eventuate; (2) that she could survive the experience of being in the feared situation; (3) her anxiety would decrease without any avoidance or distraction techniques; and (4) that the imagined scenes would simulate as much as possible the actual scenes that she would soon enter. Lisa responded well to these hypnosis suggestions, and reported being able to experience marked anxiety reductions in the imagined scenes.

As she developed more confidence in the hypnosis, we integrated post-hypnotic suggestions that directed her to feel mastery over her anxiety when she was in the real scenes. These post-hypnotic suggestions highlighted that anxiety was not an emotion to be avoided but rather was a reaction that provided her with the opportunity to learn that she could feel safe in the situation. Lisa then commenced on the hierarchy. She was required to provide ratings of her distress on a 100-point scale (0 = 'not at all anxious', 100 = 'extremely anxious'), and was required to remain in the scene until her anxiety

had reduced by 50 percent from its peak. Lisa rapidly made gains in riding the elevator and also in looking out of windows in skyscrapers.

The next obstacle in treatment was flying. The major issue here was that Lisa did not have the opportunity to fly often. Accordingly, we implemented an intense period of hypnosis and self-hypnosis that focused on suggestions that she was flying. Specifically, we suggested to Lisa that she was approaching the airport, checking in, boarding the plane and realistically perceiving that she was in the plane as the engines started, and took off. Lisa had previously demonstrated that she was capable of highly absorbing experiences, and she was able to imagine these scenes vividly. More importantly, Lisa was able to experience panic-like symptoms during these imagined scenes. This level of distress was required to ensure that she would learn mastery. Each time Lisa imagined this scene, we required her to remain in the scene for 30 min, and then we suggested that she could notice that her distress was reducing. We ensured that the suggested scene did not finish until she felt relative comfort. Lisa was given an audiorecording of the hypnosis session, and instructed to practice it daily. After 1 week, the suggested scene was amended to increase her distress. Specifically, the suggestion described the plane flying through turbulence and the plane being rocked for lengthy periods, the passengers being instructed to remain seated with seatbelts on and all the air stewards being told also to sit. This element was introduced because it is important that exposure to all feared scenes is addressed to reduce the likelihood of relapse occurring.

Finally, Lisa was asked to take three short flights. Prior to taking the flights, she rehearsed the strategy of calculating her feared outcome. We did not ask her to complete her self-hypnosis during the flights because we did not want her to learn that she felt safe because of the self-hypnosis (or reliance on the hypnotist's voice). It is possible that self-hypnosis can become a safety behavior that people rely on to reduce their distress. This reliance on some behavior (such as self-hypnosis) can impede the learning that flying itself is not immediately dangerous. We instructed Lisa to evaluate the risks of danger during the flight, and to remind herself that she was not being harmed in any way.

21.7.4. Outcome

Lisa responded to the initial hypnosis sessions very positively. She was able to engage in the imaged exposure very readily. Not only did she experience initial anxiety when imaging herself in various scenes, she was also able to experience anxiety reduction while still imagining herself in those scenes. Understandably, she experienced markedly more anxiety when we commenced the exposure to actual heights, such as tall buildings. Notably, Lisa reported that during the exposure activities, she became aware of the post-hypnotic suggestions of mastery of these situations. She reports that she was able to remind herself of these suggestions, which assisted her to remain in the situation until her anxiety had sufficiently reduced. When she came to take the actual flights, Lisa reported that she coped surprisingly well. On the second flight, the plane flew through marked turbulence, which immediately increased her anxiety. At that point, Lisa was able to remind herself that the bouncing was actually fun (which was a suggestion that we had built into the end section of the imagined hypnotic scenes), and she states that she was able to manage the flights successfully. Three weeks after treatment completed, Lisa accepted a new position in her company and commenced flying regularly.

21.8. Summary

There is no doubt that hypnosis can facilitate established means of treating anxiety disorders. Fear conditioning and extinction models have led to treatments that involve new learning, and there is convergent evidence that this learning can be enhanced by hypnosis in numerous ways. The greater ability of hypnotized individuals to engage in imagery, focused attention, motivation to comply with instructions and imaginal rehearsal of mastery of fear all combine to potentiate the treatment gains for anxiety patients. It is unfortunate that hypnosis is not integrated more fully into randomized controlled trials of psychological therapies of anxiety disorders. The evidence that hypnosis does increase the treatment gains made by established treatments (Kirsch *et al.*, 1995) points to the need for more rigorous study of hypnosis.

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CHAPTER 22

Hypnotic approaches to treating depression

Michael D. Yapko

22.1. Overview

The great American humorist, Mark Twain, once observed that, 'life is one damn thing after another.' Indeed, life does pose many challenges to all people on a regular basis. And, paradoxically, our sources of strength for coping well also represent our vulnerabilities: if you have a job, you run the risk of losing it. If you have good health, you run the risk of contracting illnesses or suffering injuries. If you have people you are close to, you run the risk the losing them to death or geographical distance. Given the difficulties that all of us encounter from time to time, it is immediately relevant to developing a clinical focus to ask a most complex question: why do some individuals face the challenges of life and manage to transcend them and, despite them, declare themselves happy? And, as a corollary question, why do other individuals face adversities that overwhelm them and not only impair them emotionally, but lead them to suffer in every other aspect of their lives as well?

Depression has gone from being one of the least well understood to one of the best understood disorders that clinicians are asked to treat. An impressive array of research has highlighted the extraordinary complexity of depression, and much of this research has resulted in a proliferation of clinical approaches to treatment that hold great promise for helping individuals and

their families recover (Clarkin *et al.*, 1996). Some of the most important insights derived from the research will be reviewed in this chapter, especially as they relate to clinical interventions which employ hypnosis. For a variety of reasons, hypnosis has historically been overlooked as a component of effective treatment. More will be said about this later, but it is important to note at the outset that hypnosis can easily be integrated with other, more established, treatment approaches that have an empirically supported base which justifies their use.

Despite the huge body of scientific literature describing the risk factors, onset and course of depression, as well as the relative merits of various forms of treatment, the insights gained thus far have not yet slowed down the rapidly rising rates of depression in the USA or the world. In a recent statement from the World Health Organization (WHO), depression was declared the leading psychological cause of human suffering, and the prediction was made that the rate of depression would continue to rise to staggering proportions in the years to come (World Health Organization, 2002). To the many researchers and clinicians striving to slow the growth of depression, the WHO prediction is a disheartening blow. However, it also presents an opportunity to re-evaluate what we have

learned about depression, and what we can do differently in our collective attempts to establish more effective treatments that can be more readily available to larger populations of depression sufferers.

Depression is a terribly costly disorder on many levels. It is costly *financially* when people lose their ability to be productive and function well in their jobs (Greenberg *et al.*, 1993). It is costly *physically* when depressed individuals cannot, or will not, take even simple steps to guard their health, thus costing much more in health care costs compared with nondepressed patients (Gabbard, 1998; Frasure-Smith *et al.*, 2000). Depression is costly *socially* when it causes marital and family distress, leading to poor parenting, family disintegration, divorce and a variety of forms of antisocial behavior (Cummings, 1994; Yapko, 1999; Goodman and Gotlib, 2002). Perhaps the most costly level, however, is the *personal* level of suffering caused by depression. When people live in an enduring and debilitating state of despair, distress and misery, the costs in human potentials never realized cannot be overstated.

Although effective treatments have been developed that will help improve the lives of those individuals who manage to seek professional help, it is one of the unfortunate truths that the very nature of depression precludes most sufferers from seeking appropriate treatment. It is estimated that not even half of the people who suffer depression will seek help and, of those who do, it is further estimated that only about half of them will receive adequate treatment (Kessler *et al.*, 2003). There are many reasons why depressed individuals do not seek treatment, including the stigma of having a mental disorder, the lack of adequate health insurance coverage to assist with the costs of treatment, the lack of recognition that depression is the problem and, perhaps most influential, the passive and hopeless nature of depression itself, which leads the sufferer to believe that nothing will help and therefore seeking help is pointless (Seligman, 1989, 1990; Yapko, 2001a). These issues pose a special challenge to mental health professionals in particular, requiring them to educate the public about the signs and symptoms of depression, the various treatment options available and what one

can realistically expect to gain from treatment that warrants actively pursuing it.

Unfortunately, the most common means of educating depressed individuals about depression has been the use of various forms of drug advertising in the media by the pharmaceutical industry (Zimmerman *et al.*, 2004; Moncrieff and Kirsch, 2005). The suggestion is made authoritatively and repetitively to the public that depression is a consequence of a brain anomaly that medication can correct. Thus, depression sufferers are led to believe that the problem is in their brain chemistry, not their lives. There is considerable evidence that this exclusively biological view of depression is overstated to the point of inaccuracy (Yapko, 1997; Healy, 1998; Burns, 1999).

What causes depression? How one answers this question is the single greatest determinant of what one will focus on and treat in therapy, either with or without hypnosis. Is depression caused by genetics? A biochemical imbalance? Psychosocial stressors? Cognitive distortions? Social inequities? Cultural and familial influences? In fact, all of these and also many other factors are well-established contributors to the onset of depression.

22.2. The complexity of depression

Depression is a heterogeneous condition, and a variety of biological, psychological and social theories have been formulated to describe its development and nature. There is substantial evidence supporting the so-called *biopsychosocial* model of depression, acknowledging that depression has a *biological* component, a *psychological* component and a *social* component (O'Connor, 2001; Pettit and Joiner, 2006). Thus, effective treatment will necessarily have the ability to focus on and amplify the most salient components of a given individual's depression. For some individuals, that will mean focusing on physiological factors, for some that will mean focusing on intrapersonal factors, and for others it will mean focusing on interpersonal factors.

Depression is routinely talked about as if it were a singular phenomenon. However, one of the factors complicating clinical practice is that

there is no single uniform character to depression. It has been pointed out that there are 227 possible combinations of symptom presentations for making the DSM-IV diagnosis of major depression (Buchwald and Rudick-Davis, 1993; American Psychiatric Association, 1994; Pettit and Joiner, 2006). Recently, the United States Preventive Services Task Force (USPSTF, May 21, 2002) suggested that the diagnosis of depression could reliably be made from a simple two-question screening device. The two questions ask about *mood* ('Have you been feeling down, sad, blue or depressed for the last month or more?') and *anhedonia* ('Have you lost interest in or stopped deriving pleasure from the things that normally interest you or give you pleasure?'). If someone answers yes to these two questions, there is a high probability that he or she is either already depressed, or is at an elevated risk for depression. Further assessment is then clearly warranted.

There is another factor compounding the difficulties in assessing depression accurately, namely the co-morbid nature of depression. Depression is most often associated with other psychological and physical conditions (Stevens *et al.*, 1995). The most common of these co-morbid conditions is some form of anxiety disorder (Barlow, 2000; Kaufman and Charney, 2000). Depression is also co-morbid with substance-related disorders, eating disorders, personality disorders and scores of medical conditions. Anxiety is not only a co-morbid condition with depression, it is also an established *risk factor* for depression. There is substantial evidence that clinically significant levels of anxiety precede the onset of depression, usually by many years, and that the number of anxiety disorders present, the persistence of anxious avoidance behavior and the degree of psychosocial impairment represent the strongest factors associated with the onset of depression (Wittchen *et al.*, 2000).

One could reasonably predict, then, that as life continues to grow more complicated, and as world conditions grow more volatile, the rates of anxiety will continue to rise, as will the rates of eventual co-morbid depressions. The main point is that *depression does not occur in a vacuum*. Depression comes about for a variety of reasons that may involve biological vulnerabilities and

environmental, contextual, catalysts. This represents the issue alluded to earlier, namely the question regarding why some individuals cope with adversity and difficulty better than others. What have we learned about effective coping from people who have suffered and transcended adversities in life, i.e. those who did not become depressed in potentially depressing circumstances?

22.3. Skills worth learning—and teaching

There are specific skills that people who have faced and transcended difficult life challenges possess. Typically, these are skills the person may not even be conscious of possessing—they are simply part of the person. These include cognitive strategies as well as coping strategies (Holahan *et al.*, 1999; Compas *et al.*, 2002). Examples of cognitive strategies include seeing and framing life circumstances in positive ways, expecting positive life circumstances in the future, feeling as if one has control over situational outcomes and minimal encoding of a negative event's details into one's memory for later recall. Examples of coping strategies of well-being include 'positive illusions' (i.e. exaggerated perceptions of self, the future and situational control), finding positive meanings in negative events, enjoying humor, avoiding social comparisons and placing an emphasis on spirituality and faith (Lyubomirsky, 2001).

Can people who do not innately possess such skills learn them and show a measurable benefit for doing so? In other words, can a depressed person, or a person at risk for depression, learn cognitive, behavioral and social skills, and thereby reduce the frequency and severity of depressive episodes? The answer is unambiguously, yes. In a review of the therapeutic efficacy literature, there is substantial evidence for the effectiveness of cognitive-behavioral therapy (CBT) and interpersonal therapy (Beck, 1997). In fact, these therapies are widely considered to be the treatments of choice in the psychotherapy of depression (Elkin *et al.*, 1989; Depression Guideline Panel, 1993; DeRubeis *et al.*, 1999). Both approaches have received impressive

empirical support, and established treatment guidelines typically suggest their use. CBT is focused on teaching the depressed client specific skills regarding clear thinking, ways to be more objective about aspects of life experience and ways better to gather and weigh information (Beck, 1976, 1996). Interpersonal therapies focus on teaching the social skills necessary to create and maintain healthy and satisfying relationships (Klerman *et al.*, 1984). Given the frequency with which other people can be the source of one's distress, the skills taught in the interpersonal therapy model may be especially relevant in some cases.

Those therapies with the greatest empirical support for their effectiveness each emphasize teaching specific skills as a means of empowering the client. A primary function of hypnosis is to facilitate the skill acquisition process. What are some of the specific skills known to reduce depression that are enhanced with hypnotic intervention?

22.4. Five specific targets for intervention

22.4.1 Building positive expectancy

In the cognitive models of depression, primarily set forth by Aaron Beck (1967, 1976; Beck *et al.*, 1979), Albert Ellis (1987, 1994, 1997) and Martin Seligman (1989, 1990), significant attention is paid to the hopelessness commonly found in depressed individuals. Beck specifically addresses what he terms *negative expectations*, while Seligman specifically addresses what he terms a *stable attributional style*. In both views, depressed people's characterization of the future as negative is highly demotivating and accounts for at least some of their apparent apathy and passivity. Thus, it becomes a primary goal of treatment to *help the hopeless client develop positive and motivating expectations for the future*. Specific methods for hypnotically building positive expectancy have been described in detail elsewhere (Torem, 1988, 1992, 2006; Yapko, 1988, 1992, 1993, 2001a).

22.4.2. Recognizing and tolerating ambiguity

People strive to understand and make meaning out of ongoing life experience. Much of life

experience, however, is innately ambiguous, thereby making it difficult to know either a true or an objective meaning of life events. Ambiguity raises, while certainty lowers, people's anxiety. It may reasonably be said that the cognitive distortions described by Beck represent deliberate efforts to reduce or even eliminate ambiguity as a means of coping. Unfortunately, the errors made in attempting to cope may aggravate circumstances rather than help them; the person may make inferences or draw unwarranted conclusions that are self-damaging. Thus it becomes another primary goal of treatment to *help the client learn both to recognize and tolerate ambiguity in order to minimize making and negative, self injurious projections*. A detailed hypnotic strategy for helping clients recognize and tolerate ambiguity has been described elsewhere (Yapko, 2001b,c).

22.4.3. Improving coping styles

Recent research addressing the question of how different people respond to their depressed moods has been especially fruitful in increasing our understanding of effective versus ineffective coping styles. One coping style which will exacerbate depression is called the *avoidant coping style*. Avoidance is an inherently disempowering coping style because it places one in a victim's position. When one assumes an avoidant position, one is essentially saying the problem is greater than oneself. *One literally cannot recover from depression from a victim's standpoint*.

The *ruminative coping style* has an especially strong association with depression. Rumination means repetitively and passively thinking about one's bad feelings and may include frequently expressing to others how badly one feels and pondering seemingly endlessly why one feels bad. Ruminative responses are highly predictive of higher levels of depressive symptoms over time, depressive disorders, including new onsets, chronicity of depressive disorders, and the greater presence of anxiety symptoms (Nolen-Hoeksema, 1991, 2000, 2003). Rumination can lead to what some have called the 'analysis paralysis', highlighting the importance of taking sensible and timely action in addressing one's problems, rather than merely contemplating one's feelings. *Helping depressed clients know*

when to analyze and when to act decisively are primary goals in treatment. Hypnosis to ‘seed’ (i.e. introduce and build an affinity towards) skill-building homework assignments and motivate their completion is just one example for intervening in the domain of coping style (Geary, 1994).

22.4.4. Enhancing decision-making strategies

One of the more recent and illuminating lines of research concerns the relationship between the depressed person’s decision-making strategies and the exacerbation of his or her depression. Known as the ‘stress generation’ model of depression, the evidence suggests that *depressed individuals often make bad decisions that serve to intensify their depression* (Hammen, 1991, 1999). This is not an intentional process, rather the person makes a poorly thought out decision, implements it, and the result is a negative consequence that makes him or her feel worse.

There is a growing body of evidence that stressful life events may precipitate the onset of depression, but the reverse is equally true: *depression generates stressful life events*. Simply put, depressed individuals experience a higher rate of negative events that are at least partly dependent on their own behavior (Pettit and Joiner, 2006). It is fair to say that the quality of one’s life is largely the consequence of the choices one makes. For example, when a depressed individual is urged by a loved one to seek treatment, and he or she declines, that individual is making a poor decision that will probably make matters worse. Or, as another example, using alcohol or drugs to manage one’s anxiety or agitation is a decision that holds great peril (Holahan *et al.*, 2003).

There is evidence to suggest that poor decision-making does not occur only during depressive episodes. Not surprisingly, the evidence is that these same poor decision-making strategies function even in between depressive episodes. Thus, *teaching effective decision making strategies that empower the person to make better life decisions is another primary goal of treatment*. A hypnotic strategy for exploring one’s options and choosing among them wisely has been described elsewhere (Yapko, 2001a).

22.4.5. Developing relationships skills

Mood is contagious, as are socialized values. As a result, one’s relationships with others is a particularly sensitive domain that is, unfortunately, under-represented in the depression literature. However, there is a growing body of evidence that the quality of your relationships has a profound effect on your mood and health (Dubovsky, 1997; Gabbard, 1998; Yapko, 1999). In studying the social lives of depressed individuals, the negative effects are apparent: depressed individuals tend to have fewer social skills, fewer close relationships, less elaborate social networks, less rewarding relationships and receive less social support (Keltner and Kring, 1998; Joiner and Coyne, 1999) than nondepressed individuals. Thus, *depressed individuals have difficulty creating and maintaining satisfying relationships*. Interpersonal patterns, then, can cause and maintain interpersonal difficulties, including perfectionism and being judgmental towards others, excessive reassurance seeking, continually expressing negative thoughts and feelings to others, lacking empathy towards others, irritability and even angry outbursts, withdrawing from others, avoiding conflicts and other such negative social behavior (Joiner *et al.*, 1999; Pettit and Joiner, 2006).

One of the most important skills for a depressed person to develop, because an absence of the skill invites victimization, is the ability to create and maintain one’s personal boundaries. When one is unable to say no to hurtful people or to set limits on their hurtful behavior, it is easy to appreciate how one can feel invaded and victimized. Thus, *helping clients develop skills in limit setting, as well as other skills necessary to build and maintain healthy relationships, is an essential part of their treatment*.

The five targets for intervention described above represent some of the most common areas of concern, but there are many, many others as well. These have been well described in the literature and should become familiar to all clinicians (Yapko, 1997, 1999; Burns, 1999; O’Connor, 2001).

22.5. Hypnosis in treating depression

There are numerous overlaps between the separate yet related domains of hypnosis and

depression: (1) both come about and increase in intensity the more narrow one's focus; (2) both are ultimately social processes, greatly influenced by one's relationships with others, whether the other person is a clinical authority sensitively describing the therapeutic merits of exposing you to an induction procedure, or the other is a parent or spouse insensitively describing the flaws in your character; (3) both are a product of expectancy, whether the expectation is one of getting the benevolent corrective message 'into your unconscious' through suggestions received in a dissociated state, or whether the expectation is that no amount of effort from you will result in a success, thereby giving rise to the apathy so typical of depression; and, (4) both involve what hypnosis pioneers Theodore Sarbin and, later, Ernest Hilgard, described when they suggested hypnosis is, in part, a 'believed-in imagination,' an experience based on the recognition that people can and do get deeply absorbed in highly subjective beliefs and perceptions that quite literally regulate the quality of their lives (Sarbin, 1997; E. R. Hilgard, personal communication, 1988). These beliefs and perceptions can be altered and amplified during the experience of hypnosis, illustrating the point well how idiosyncratic each person's sense of reality really is, especially in response to 'mere' suggestions (Yapko, 1995, 2003).

The notion of an individual's personal reality essentially being a 'believed-in imagination' preceded the origin and development of cognitive therapy by decades, even centuries, and firmly established the relevance of hypnosis in treatment. CBT is, at this time, probably the most well-researched method of therapeutic intervention (Sacco and Beck, 1995; Burns, 1999; DeRubeis *et al.*, 1999). It is founded on the premise that people in general, and depressed people in particular, regularly make identifiable errors in information processing, thinking and genuinely believing in their mistaken notions of what truly—and depressingly—seems like reality to them (Beck, 1976, 1997; Beck *et al.*, 1979). This process of becoming absorbed in one's (depressing) imaginings is, indeed, an instructive parallel to what occurs in hypnosis, where a clinician performs an induction and attempts to absorb the individual in alternative and beneficial ways of experiencing him or herself.

Through procedures employing hypnosis, the clinician creates a context where the individual can change the direction and quality of his or her focus (Barabasz and Watkins, 2005). Perhaps the suggested focus is on engaging in some new life-enhancing behavior, or perhaps on exciting and motivating glimpses of future possibilities, or possibly on re-writing some of the negative internal dialog, or somehow altering for the better any of literally scores of depressing focal points (e.g. cognitive styles, coping styles, relational styles). What the clinician suggests during hypnosis may not be any more true in an objective sense than what the person previously believed—it may just feel much better and serve the person better (Yapko, 1992, 2001a, 2003).

Depression as a 'believed-in imagination,' i.e. a consequence of getting deeply absorbed in ways of thinking, behaving, relating or living that make life seem joyless and burdensome? Hypnosis as a means of absorbing the person in a more skillful, adaptive, beneficial, and even positive frame of mind? This is hardly an 'off the beaten path' perspective. On the contrary, for the treatment efficacy literature is wonderfully unambiguous in describing how when people learn the key skills for living life well, such as the skills described earlier of thinking critically, behaving effectively and building positive relationships with others, they tend to recover from depression (Beck, 1967; Depression Guideline Panel, 1993; Yapko, 1997, 1999; Burns, 1999; O'Connor, 2001; Markowitz, 2003). Hypnosis as a means of teaching people, a vehicle for getting new possibilities for thinking, feeling, behaving and relating integrated more quickly and deeply is precisely why knowledgeable clinicians do hypnosis in the first place.

22.5.1. The process is part of the solution

The process of psychotherapy is itself illustrative of the recovery process for depression. It illustrates the gathering and weighing of relevant information, the formation of specific goals, the delineation of specific steps towards the goal, the use of feedback to adjust one's course and the use of newly acquired information to redirect and refine the whole process. Hypnosis can play a key

role in the treatment process. Hypnosis models flexibility; its use makes an indirect statement that suggests the clinician and client can relate to each other in a variety of ways, it provides direct experience of the subjective nature of one's perceptions and beliefs and it highlights the malleability of one's internal experience, including the experience of one's symptoms.

What exactly does hypnosis do? Hypnosis amplifies or de-amplifies specific elements of experience. It generates associations and dissociations that can be directed therapeutically (Zeig, 1980; Kirsch *et al.*, 1993; Yapko, 2003). Does hypnosis cure people? In my opinion, the answer is an emphatic no. It's not hypnosis that is curative, rather, it is what happens *during* hypnosis that has the potential to be therapeutic. Specifically, it is the new and beneficial subjective associations the client forms during the hypnotic experience that have the potential to help the client think, feel and behave differently. Hypnosis allows for the creation of a focused context of change while minimizing the stresses of making the change.

There are different ways to use hypnosis in treatment, and how one chooses to apply hypnosis will be a direct product of how one conceptualizes the nature of depression, the dynamics of psychotherapy and the capacities of hypnosis as a treatment tool. Hypnosis may be used to: (1) teach symptom management strategies, such as reducing anxiety or enhancing sleep; (2) access personal resources for skill building, such as enhancing cognitive flexibility or building problem-solving skills; (3) de-framing and reframing personal meanings, such as helping the client understand he or she is not destined always to feel the same way; and, (4) suggesting specific associations and dissociations, such as shifting the focus away from feelings to taking action, or shifting the focus from the past to the future.

One can describe the term 'depression' as a global shorthand, a convenient label for a wide range of symptoms and patterns of experience. Effective treatment must first involve identifying the salient patterns that regulate the experience of depression in a given individual. We also know that therapy, *any* therapy, will necessarily have to interrupt ongoing patterns of experience in some way and generate some new patterns of

experience that prove beneficial to the client's mood, outlook and behavior. The task for the clinician is to absorb the client in new patterns, whether patterns of thought as in cognitive therapy, patterns of physiology as in somatic-based interventions, or whatever patterns are addressed in a specific style of intervention. Hypnosis is multidimensional in its ability to focus anywhere and catalyze the merits of the intervention, whatever form it might take.

Hypnosis amplifies experience. The first principle one learns in studying hypnosis is that what one focuses on, one amplifies. Thus, a clinician has to be deliberate about choosing focal points for his or her interventions. Focusing on someone's cognitions, for example, shouldn't be a standard procedure as a self-identified cognitive therapist. It should be a choice one makes to focus on the client's thoughts because there is a powerful depressogenic pattern operating on that dimension. But, for someone else, the focus will need to be on his or her relationships, and for someone else on his or her sleep difficulties. What a clinician will focus on and amplify with hypnosis will, hopefully, differ according to the unique profile of each individual client. This is one of the great strengths of being knowledgeable about hypnosis: *the ability to make good therapeutic choices based on client need outweighs loyalty to a particular theory of intervention.*

22.5.2. Is there empirical support for applying hypnosis in treating depression?

Hypnosis in the treatment of depression is a relatively new application; for most of the first hundred years of psychotherapy, the use of hypnosis in treating depressed individuals was actively, even aggressively, discouraged. When acclaimed experts in hypnosis taught for decades that hypnosis would 'strip away defenses' and 'precipitate psychotic reactions' in depressed people, or 'energize their suicidal ideation' and thereby transform it into suicidal behavior, there seemed to be no credible therapeutic rationale for employing hypnosis with depression sufferers (Yapko, 1992, 2001a, 2006). Times have changed, though: treating people and not their diagnostic labels, structuring hypnosis sessions to build

positive expectations for the future instead of amplifying negative ones, and finding and hypnotically expanding people's resources instead of merely trying to explain their pathologies, are all ways clinical practice has changed for the better and how hypnosis has come to be immediately relevant to treating depression sufferers.

One of the prices for having ignored hypnosis as a treatment tool all these years, however, is that controlled research on ways hypnosis can be skillfully applied in the treatment of depression, to date, has been under-studied (Alladin, 2006). There are plenty of studies that show hypnosis enhances treatment results, helps people manage anxiety, helps them feel personally empowered, enhances their mood and outlook, and helps in so many important ways (Lynn *et al.*, 2000; Montgomery *et al.*, 2000; Schoenberger, 2000). But, historically, these benefits have been framed as mere side-effects of treating other client populations (such as pain patients), and so the benefits of hypnosis for relieving depression can only be inferred from such data. In the only study specifically targeting hypnosis with depression, Alladin and Alibhai (2007) found CBT with hypnosis to be superior to CBT without hypnosis in treating depression.

But, clinicians aren't usually researchers, and psychotherapy is, at best, only partially about science. Clinicians can and certainly should be informed by science, but the reality is that therapy is largely about artistry. It's about gut feelings, clinical judgment, thinking on one's feet and quickly changing directions when one starts to hit an impasse with a client. These are not skills that can be manualized, standardized or scripted. Thus, applying hypnosis in novel ways and observing the effects is the clinician's domain, and research can only go so far in informing it. It really is all about clinical experience and skillful judgment in planning and executing an intervention, and using the feedback that follows to determine whether it made a positive difference.

Hypnosis does many things that are immediately relevant to helping depressed individuals. Hypnosis: (1) helps people focus; (2) facilitates the acquisition of new skills; (3) encourages people to define themselves as more resourceful than previously realized (enhancing their self-image as a result); (4) makes the transfer of information from one context to another easier and more efficient; (5) establishes helpful subjective

associations more intensively; (6) helps the learning process to be more experiential and meaningful; (7) defines people as active managers of their internal world; (8) helps one sharpen key perceptual distinctions; (8) allows a safe distance from powerful feelings; (9) encourages one to proceed with new possibilities in a deliberate behavioral sequence; (10) allows one to rehearse new adaptive responses; (11) helps one develop undeveloped personal resources; and (12) helps detach from a sense of victimhood. No one gets past depression without achieving all of these things and more.

In the remainder of this chapter, two case examples are provided to illustrate how hypnosis might strategically be integrated into CBT and interpersonal therapy for depression. These cases both illustrate a major point of this chapter: *when people are empowered better to handle the circumstances that cause them distress, whether internal or external, they improve.*

22.6. Case example 1: the case of Mary

22.6.1. Background

Mary (not her real name) sought therapy to, in her words, 'help me to stop being too emotional a person'. Specifically, Mary reported that she 'alternated between being sad and angry'. Most of the time she felt as though her life was just 'too difficult to keep up with,' and at times she would 'explode with anger'. Mary was in her early 40s, married 8 years to a man 15 years older than she, and was a stepmother to his two children from a previous marriage. She had no children of her own. She was employed full-time as an accountant.

Mary's family history was immediately relevant to her concerns. She was born to an unmarried couple, the product of an affair her single mother had with a married man. She was treated as, and in fact was, an unwanted child. Her mother made little effort to establish a loving and close bond with her, and her father was entirely removed from her life by his choice to abandon both her and her mother. Mary reports that she also received little affection and little acknowledgment from her extended family of aunts, uncles, cousins, etc., and essentially grew up feeling isolated and entirely unimportant.

Mary was very bright and articulate, and, despite her poor home environment, she managed to do well in school and strived to perform well for her teachers. She had few close friends, but did have a couple of good friendships she maintained through grade school and high school. She managed to stay focused on meeting her school obligations and part-time job obligations as well, and grew up without suffering any additional major traumas beyond that of her impoverished home life.

22.6.2. Formulation

The net effect of Mary's history on her was to feel socially detached, develop a deep distrust for people in general, and a suspicion of anyone who seemed to show any special interest in her (she assumed it was for some hidden, self-serving agenda). She had no substantive skills in assessing people for their true character or nature, and instead dismissed people as globally untrustworthy. Such an overgeneralization is an obvious cognitive distortion, though an understandable one given her background. It reflects the lack of an ability to discriminate people who are loving, generous in spirit and trustworthy in their intentions from those who are not. Consequently, other people remain a mystery to her, and she senses no ability to define her relationship with them proactively. She is frustrated in her desire to have warmth and closeness with others, and so is hypersensitive to anything that looks even remotely like either betrayal or disapproval. Thus, she gets very angry very quickly when someone says or does something she perceives as hurtful.

Mary reported that it took a very long time with many conflicts along the way to allow the man who would become her husband into her life. She has grown to trust him and love him, yet he is often the recipient of her angry tirades when he does things even she considers, in retrospect, to be minor transgressions. She ruminates endlessly about why she is the way she is, and asks herself global questions that reinforce her ruminations, such as, 'Will I ever be normal? Why did my mom have to get pregnant with a baby she didn't want? What if my husband leaves me?' Her ruminations feed her negative feelings about herself and her life, and the episodes of anger compound her frustration

with herself and reinforce her belief that she is too emotional and 'weak'.

When Mary reports that she is generally suspicious of people and expects the worst from them, she is demonstrating a self-limiting pattern that involves cognitive (the belief that people are fundamentally untrustworthy and self-serving), emotional (angry and sad feelings), behavioral (angry outbursts) and interpersonal (social avoidance, withdrawal) dimensions. All of these and more would need to be addressed in a treatment as multidimensional as her problem.

22.6.3. Treatment plan

In formulating a treatment plan for Mary, it was evident that she was suffering dysthymia. Its origins and current manifestations were primarily rooted in the interpersonal dimension of her life (her rejection by her family, her discomfort around other people, her conflicts with her husband). Her conclusion that she was 'too emotional' was a result of her self-appraisals made from her conduct with and feelings about others.

A number of specific goals for treatment were readily established:

1. Establish a positive therapeutic alliance based on Mary feeling both supported and challenged by our interaction. Mary was informed that treatment would be an educational process, and would involve discussions in our sessions, the assignment of homework and task assignments to help teach and consolidate new skills, and the use of hypnosis to make learning easier and the implementation of new skills more automatic.
2. Help Mary recognize that she is 'more than her feelings', i.e., that her feelings are only one part of her. An ability to compartmentalize her feelings is a necessary step in learning when to listen to and respond to her feelings and when to respond from other parts of herself (e.g. rationality). This is meant to counter emotional reasoning.
3. Help Mary recognize that she is not defective or too emotional, but is missing specific skills that lead her to mismanage some situations to her own detriment. This is an essential reframing: it's not your genes (or biochemistry, or

history), it's the way you manage particular contexts that work against you—and you can learn to manage them differently. This is one aspect of building positive expectancy, informing the client that by approaching things differently, things can improve. It enhances co-operation, increases treatment compliance and de-pathologizes the person.

4. Help Mary develop an assessment strategy regarding other people so she can more objectively determine their character (values, intentions, consistency, etc.) in order to be more deliberate about deciding how best to relate to them. Much of Mary's anger is a direct consequence of having unrealistic expectations of others that she then blames them for not fulfilling. In asking Mary, 'How do you know whether your expectations for others are reasonable?', her telling reply was, 'I don't. Mary could feel empowered around others as well as less angry with them when she could learn to recognize people's strengths and limitations rather than wanting things from them they can't provide and then getting angry when they don't fulfill her wishes. Instead of fearing other people, she could be curious about them and be more insightful about them. This helps build confidence, curtails rumination and encourages one to be less internally and more externally oriented, a key aspect of becoming better at gathering and weighing relevant information.
5. Help Mary develop more flexible and realistic expectations for herself, learning to accept her feelings as valid but still having a sense of choice as to whether to express them and, if so, what the best way might be to express them. This encourages selectivity and impulse control.
6. Help Mary become more skilled at recognizing and tolerating ambiguity. Before she jumps to erroneous or merely unsupported conclusions (another cognitive error), Mary needs to generate multiple interpretations as to why people do what they do or why events occur as they do. This counters cognitive rigidity and reinforces the need to go outside oneself for more and better information (i.e. 'reality-testing').

Mary agreed that each of these goals was appropriate and was visibly excited that these highly relevant goals were possible to articulate and structure. This, too, gave her lots of hope and positive motivation. She assured me she would participate fully in the therapy and do whatever assignments I thought might be beneficial to her. We agreed to meet on a weekly basis for four sessions to start, and we'd evaluate our progress and determine further needs at that time.

22.6.4. Treatment

Following her description of her symptoms and relevant history, questions were asked about *how* she determines who is trustworthy, *how* she decides who's a risk, *how* she evaluates people and a stream of other such 'how' questions attempting to uncover her cognitive and behavioral sequences and decision-making strategies. When someone doesn't have specific skills that are hurting them, these become the targets of intervention. Specifically, what patterns do people manifest that work against them in attempting to do whatever it is they're trying to do? When Mary's reply, for example, to the question, 'How do you assess someone's character?' is answered with a global reply, 'If they seem nice', it is apparent she is missing some key assessment skills that can lead to her being hurt in her relationships.

In Mary's case, she was so internally absorbed (in her feelings, suspicions, past failures, etc.) around others that she was unaware of ways to gather and use information about people that they reveal in routine interactions. Thus, in the very first session, a brief hypnosis session was conducted to reduce her anxiety, focus her on external evidence about others (i.e. suggestions to notice specific patterns in the way people approach various aspects of life), and how to interpret the possible meanings of her observations in order to start to look for further evidence to confirm or disconfirm her impressions. This session, as are all my sessions, was tape recorded and the tape was given to Mary to re-experience as often as she'd like. Suggestions for being interested in and willing to do later homework assignments ('seeding') were also given. Following the hypnosis, she was given homework assignments to: (1) identify the rules

that operate in specific contexts, such as protocols she must follow with her accounting clients if the interaction is to go well in order to sensitize her to the reality that interactions have rules or specific boundaries that define them; and (2) articulate her expectations of other people in writing *before* she gets into an interaction with them and then look for specific evidence in their words or deeds that indicate that the expectations for them are realistic.

In the second session, Mary reported that our first session had been enormously informative and helpful to her. She had never considered before that perhaps her expectations of others were unrealistic. She had been too angry that people kept disappointing her. She took to heart the message that there are good people and there are not-such-good people ‘out there’, and her job was to learn to tell who was who rapidly and effectively. Thus, in this session, the discussion focused on specific ways to assess others. We discussed learning about people’s ways of dealing with their feelings, whether they tolerate differences between themselves and others well or attempt to control others, whether they are able to accept responsibility for themselves or instead blame others for their mistakes, and other such patterns of relating to others. Mary was starting to learn specific ways people differ, and this was reinforced with another hypnosis session addressing the theme of how much can be learned about someone from the choices they make, whether superficial choices such as clothing or hairstyle, or deeper choices such as career and family. The point was emphasized that people choose according to what they value, and knowing what someone values is a key not only to understanding him or her, but also to being able to predict what he or she is likely to do in various circumstances. Following the hypnosis session, Mary was given the assignment to pick people she knows and list their values and then predict what that means they are and are not likely to do in response to things she was going to say or do around them. She left excited to think she might actually be able to predict people’s behavior and not get ‘blindsided’ by them as much.

In the third session, Mary reported she felt much better and was much less anxious and suspicious around others. She was seeing things in

people she’d never noticed before and said, ‘now it all seems so obvious’. She’d had no angry outbursts in the previous 2 weeks, and was regularly listening to the tapes of both hypnosis sessions. But, she said she was still unsure what to say at times when people said or did things she was unprepared for. We went through a number of examples from her life experience, and discussed common denominators of such experiences. One in particular was when she felt she was being manipulated by others who were attempting to take advantage of her in some way. Together we generated multiple possible replies to someone’s manipulations: an assertive reply, a sarcastic reply, an evasive reply, a way to stall before either answering or deferring from answering, a humorous reply, and so on. Much of her anger with herself was from her inability to have better replies readily available. This caused her to feel too easily manipulated by others and thereby disrespected. We did another hypnosis session, this time on the theme of people wanting what they want and doing what they could to get what they want, whether through manipulative tactics of inducing guilt, intimidation, flattery and other such controlling tactics. This session served to make Mary feel other people weren’t out to get her or hurt her specifically, but were just trying to get their own wishes or needs met through others. She grasped the key point that people can ask for whatever they want in whatever way they choose, but it was ultimately up to her *whether* she responded and *how* she responded. After hypnosis, she was given the homework assignment to watch the televangelists on Sunday morning and identify as many of their manipulative tactics for getting people to send them money as she could.

In the fourth session, Mary reported how so many things had ‘come together’ for her—new understandings about her mother’s limitations, and new understandings about how she had seen herself as a victim of other people when, in fact, she just ‘didn’t know the rules of the game’. We discussed her insights and their implications for future relationship possibilities, and ways she could better identify and meet her needs, accepting them as valid and worthwhile. A hypnosis session was done with the emphasis on the value of knowing oneself well enough to be able

to say, ‘this is what matters to me and this is how I want to be’ with self-acceptance and an awareness that whatever position you take on *anything*, others will disagree and even disapprove, *but not because you’re wrong*. After the session, we discussed her progress over the four sessions and agreed to meet again a month later for further discussion, problem solving or whatever an appropriate agenda at that time might be.

In the fifth session, Mary declared she ‘felt happy for the first time ever’. This was a remarkable statement, and one we then discussed at length. She had sought out several couples to socialize with, an action that shocked but delighted her husband. She had not had any inappropriate angry outbursts, but had been angry a number of times and asserted herself beautifully. She was surprisingly clear that she had a boundary, a limit she could respect and maintain. She found this wonderfully empowering and said it ‘totally changes how I see people’. A short hypnosis session was done to reinforce her continuing growth in her ability to read others well, recognize and accept her unique needs and views, and be skillful in her interactions, whether with herself or with others. We agreed to meet again 2 months later for further follow-up.

In the sixth and, as it turns out, her final session, Mary came in with many stories to tell of ways she had skillfully handled the manipulations of others, especially her stepdaughter, which had previously been triggers for anger and sadness. She said she no longer endlessly analyzed (i.e. ruminated about) her feelings and was much more proactive. She had begun to develop some new friendships, and was optimistic about these. All in all, she said she felt the best she had ever felt, and hoped it would continue. We discussed signs and symptoms of backsliding to be vigilant about, and how to anticipate problems and take corrective actions before the problems grew serious. We established her ability to come back for further sessions whenever she might like to, and then we terminated amiably.

22.6.5. Outcome

Three months later, I received an e-mail from Mary keeping me up to date on what had been going on in her life. Her excitement was obvious,

her good feelings were well articulated and her expression of thanks most gratifying. She had grown quickly into the kind of person that she could respect: bright, competent, socially adept and emotionally sophisticated. She appreciated the skills she learned, and the manner in which she learned them, specifically commenting on how the hypnosis had helped her focus on what really mattered.

22.7. Case example 2: the case of John

22.7.1. Background

John (not his real name) came to therapy at the insistence of his parents because of a severe depressive episode he was suffering. John was 34 years old, and was currently living at home with his parents for the past year following the break up of a long-term relationship he’d been in. At almost the same time as the break up, he’d lost his job, a short-term position he’d had that was scheduled to terminate when it did. John had not been able to find another position to begin in a timely way, and so moved back into his parents’ home out of economic necessity. He was withdrawn, irritable and did little to try to find a new job when one wasn’t immediately forthcoming. Thus, he was doing badly emotionally, financially, socially and in every other way. His parents had been very supportive and hoped he’d ‘find himself’, but, as time went on, they realized he was getting worse, not better.

An eruption at home caused his parents to push him into treatment. It involved an episode of John stalking a woman he’d become attracted to through their interactions over the Internet. He’d communicated with her in a ‘chat room’, and quickly (and inappropriately) got very attached to her. They agreed to meet, and had a nice but uneventful first meeting. But, John began to obsess about her, fantasizing about ways she’d rescue him from his dreary life. When he started to show up uninvited at inopportune times and places, and didn’t understand her irritation at seeing him at such times, she became scared and had a restraining order filed against John. This both enraged and saddened him, and fueled his desire to let her know

he cared about her and wasn't a threat to her. He was in danger of violating the restraining order and possibly being jailed when his parents persuaded him to go for help.

Interviewing John and his parents, John was deeply embarrassed by his behavior, yet maintained that if he could just see her and explain to her that he was 'a good guy', she'd change her mind and they could be together. John's parents both supported his report that he had never been like this before in his life (i.e. so emotionally needy, impulsive and irrational). John agreed he needed help, and said he was mystified by himself, and could 'no longer tell which way is up'. His anxiety was palpable, his depression level severe and he didn't know what to do to 'get back to normal'.

22.7.2. Formulation

Following the initial description of his symptoms and relevant history, John's parents were dismissed and the session's focus turned to trying to understand John's decision-making strategies and how they led him to his current state of difficulty. Asking John such questions as, 'How did you know whether the person typing messages on a keyboard could sustain a real relationship?' and 'How did you decide you could make her want you?' and many other such 'how' questions, the cognitive distortions of emotional reasoning, jumping to conclusions and dichotomous thinking, among others, became evident. The deficits in his problem-solving capabilities were apparent, as was his lack of impulse control. But one pattern, more than any other, regulated (not caused) these others: John's inability to distinguish what is controllable from what isn't.

While it can reasonably be said that a depressed person's sense of hopelessness is the broad foundation of every aspect of treatment response, a person's perception of controllability is also a critical factor affecting his or her quality and rate of recovery. The literature on learned helplessness (Abramson *et al.*, 1985; Peterson *et al.*, 1993), which emphasizes the detriments of believing the outcomes you attain are independent of your effort, confirms its relevance for understanding the apathy and 'giving up' behavior seen in depression sufferers.

However, learned helplessness represents only one side of the controllability coin. The other side of the coin is termed the 'illusion of control', the belief that one can control the outcome if one simply approaches the task in the 'right' way. Both beliefs, that one can or can't control outcomes, can be damaging and depressing if misapplied in a specific context. The popular *Serenity Prayer* that asks for the 'wisdom to know the difference' between what is and isn't controllable highlights the terrible consequences of not expending effort when effort can be rewarded, and expending too much effort when such effort will inevitably fail.

John's low frustration tolerance and dichotomous thinking led him to 'give up' on looking for work. His emotional reasoning led him to believe his feeling he'd 'never get a job' was an accurate predictor, leading to the foregone conclusion there was no reason to try. Thus, John was steeped in helplessness about getting his career and finances in order.

On the other side, John believed he could control how his 'online girlfriend' viewed him. He believed if he approached her in the 'right' way he could make her care about him. Instead of giving up, he tried harder to make an impossible relationship work.

Telling someone who gives up easily to 'try harder' or telling someone obsessed with someone or something they crave to 'give up' is a lot like telling a depressed person to 'cheer up'. It may be technically correct, but it's a pointless intervention. People often know what to do, but not *how* to do it. John needed to learn the specifics of when to work harder and smarter, and when to walk away. And he needed to learn to use indicators other than just his emotions. People's feelings can too easily deceive them.

The 'stress generation' model of depression described earlier in this chapter is immediately relevant to John's circumstances. He was depressed, and began to make bad decisions that served to exacerbate his depression. Focusing on decision-making would need to be a part of John's treatment as well.

22.7.3. Treatment plan

John was clearly suffering major depression, anxiety and perhaps, some might even suggest, a

personality disorder. The stresses of the losses of his long-term relationship, job, independence, self-esteem, and sense of purpose and drive had all left him overwhelmed and paralyzed. Thus, the following goals of treatment, subject to revision over time, were established:

1. Reduce John's anxiety and sense of urgency to do something, *anything*, right away.
2. Help John see the 'bigger picture', i.e. his problems are more than his 'online girlfriend' needing to appreciate him more.
3. Help John compartmentalize his feelings while learning to think more rationally about and assess the feasibility of his short- and long-term goals in each area of his life.
4. Help John develop a 'discrimination strategy', a means of reliably determining what he can and cannot control in order to choose his courses of action more deliberately.
5. Help John develop effective personal boundaries that will allow him to set higher standards for his own behavior and better tolerate and accept, even when he disagrees with, the choices others make.

John agreed with each of these goals in principle, but openly expressed his doubts he could really do any of these things, particularly when he was so preoccupied with getting his girlfriend back. His skepticism was framed as understandable given how bad he was feeling right now, but he would soon learn that by learning to do some things differently, he could expect a better result. John said, albeit not in a heartfelt way, that he'd follow the treatment plan and do whatever readings and homework assignments were given to him.

22.7.4. Treatment

Once it became apparent the degree of emotional reasoning John employed in his life, the next phase of the session became a psychoeducational one. John was taught about the signs and symptoms of depression, the bidirectional relationship between thoughts and feelings, the role of cognitive distortions in generating misperceptions and inappropriate behavior, the internal orientation that distorts or even precludes more objective awareness, and so forth. John showed polite interest at this early phase, but little else.

Next, still in the first session, I introduced hypnosis to John as a means of shifting his focus to other ideas and awarenesses that could help him. He asked a couple of superficial questions about hypnosis, but agreed to participate to whatever extent he could. The hypnosis session (taped and given to him, as always) focused on ambiguity as a key issue, specifically the importance of recognizing that some situations, especially when they involve other people's thoughts or feelings, are ambiguous and it's difficult to know for certain what's true without evidence. The primary suggestion was to distinguish what is known from what isn't known, and learn to recognize when the unknowns are being filled in with projections (inferences, wishes, etc.). A series of examples were offered of people reading situations disastrously incorrectly (e.g. assuming the space shuttle was ready to fly despite the frozen O-rings because of a wish to keep to a schedule, or assuming that we could topple a brutal dictator, readily install a democracy in his country and that everyone there would welcome it, etc.). The point was reiterated that people can make bad decisions based on wishes and misinformation, highlighting the need to go beyond one's wishes and strive to be more objective about important decisions.

John relaxed visibly, and seemed to grow more attentive and more deeply absorbed in the hypnotic process as it unfolded. When he opened his eyes, he sat quietly for a few minutes before saying, 'I never really thought about how decisions get made, especially by the government. But, I get your point. I'm trying to fly and maybe I shouldn't really think of myself as cleared for takeoff yet. I'll have to think about that'. We discussed his reactions, and he was given the assignment to make a list of 10 things he knew he had absolute control over and 10 things he knew he had absolutely no control over in his life and to bring his lists with him the next time we'd meet, scheduled for a week later. He seemed puzzled by this, but didn't ask any questions, nor did I offer a rationale for the assignment.

When John returned for the second session, he began with a flurry of questions about hypnosis, therapy, the mind and brain, and antidepressant medications, among other things. His polite interest the previous week had now become a

genuine one. We discussed his afterthoughts about the session, and any new observations arising this past week. He reported that he thought a lot about what it means to be a 'prisoner of your emotions', and decided he was one. It was a distasteful self-definition, and he felt more motivated to find a way to 'get back in control'. I used his mention of that phrase to ask him for his assigned lists. He had complied and done the assignment, but not very thoughtfully. So, we spent quite a bit of time going over his lists, with frequent challenges to and clarifications of the items they contained. John tolerated this exercise well, and the level of depth of his analysis increased as we proceeded. By the time I got to the step in the exercise of asking him to make a list of the principles that help one determine what is and what is not controllable and to generate examples using those principles, John was starting to become clearer about the huge costs to him of either giving up prematurely or hanging on past the sensible 'let-go' point. We did a hypnosis session emphasizing the artistry of knowing when to hold on and when to let go, and when to do neither until more information is available. Examples were provided during hypnosis all highlighting that sometimes holding on feels worse than letting go, and vice versa, and why, therefore, it's less about one's feelings and more about the eventual result one is striving for.

John became tearful during this session and, when asked to describe what he was aware of, he slowly said, 'It hurts to want things I know I can't have'. This was accepted and agreed on, and the larger point reinforced that what defines each person's integrity, in part, is how they deal with disappointment: 'No one likes it, but the wisdom is in accepting it as an inevitable part of life'. When John came out of hypnosis and opened his eyes, he said, 'I never thought of giving up as a good thing before. But, I guess sometimes it is'. I reinforced the point that sometimes it is, and other times it isn't, and his job was to learn which time was which. Just as last time, he said, 'I'll have to think about that'. John was given the paradoxical assignment to attempt to control the uncontrollable: spend 15 min a day trying deliberately and with great effort to make it rain, or make the stock market rally or create world peace. He smiled, asked if I was serious,

then shrugged his shoulders with a passive gesture of acceptance.

When John came in for the third session, he reported he had much less desire to straighten his 'online girlfriend' out, and said he had realized that what she thought about him was directly influenced by his inappropriate behavior. He said he now realized that he no longer had the power to change her mind about him, that her mind was set against him. He said he didn't want to give up and walk away knowing she thought he was a 'flake', but it was a disappointment he'd have to bear. He hated that she thought so badly of him, but accepted that it was a result of his own doing. He appeared to be quite sincere in saying he'd gotten the point from the last session, and that 'the word integrity just kept rolling around and rolling around in my thoughts'. It seemed a good time to expand his conception of making decisions with integrity, and so we began to discuss what that meant about job-seeking, living at home at his parents' expense and the other areas of his life. He became tearful, and said he didn't feel ready to 'rejoin the human race'. Asked what resources he needed to do that, only better than he did it before, he had no answer. Hypnosis was initiated, and the session focused on how people 'bounce back' from adversity, i.e. how people develop and use resilience in coping. The phrase was used in one part of the hypnosis session that, 'there is no one so powerful as the person on a mission, the person with a clear vision of what he wants and the means to pursue it realistically'. When John came out of hypnosis, he sat quietly for awhile and then said, 'I *had* a mission. But I don't have one now.' He was given the task to take each area of his life (e.g. physical health, finances, social, etc.) and delineate short- and long-term goals for that domain. He simply said, 'okay'.

In the fourth session, John announced he'd applied for a job as a flight attendant several months ago and was now, quite unexpectedly, being offered a job with an airline company. He was excited, upbeat, optimistic and deliberate in pointing out to me, 'This is more my old self, which I hope I can now improve upon!' He had to decide relatively quickly about the job offer, and the decision was complicated by his having to make his home base in another city.

We discussed at length the ways to approach this decision, especially in light of our previous discussions. We identified the variables to consider, the likely consequences, the inter-relationship between his nature and the duties he'd have to assume, and other such factors in decision-making. John came to the conclusion that his 'gut feeling' to take the job was, this time, the right feeling to follow. I reinforced the wisdom in his discrimination that sometimes you can listen to your feelings and other times you need to ignore them because they'll lead you astray. Only by accurate extrapolations can you know whether your feelings are leading you in the right direction, i.e. a direction that will enhance your life rather than make it worse.

John committed to taking the job. In so doing, he committed to moving away from his parents, as well as the city of his failed online 'experiment'. He could meet new people, and use his 'control' to observe others carefully, self-disclose selectively and build a new network of friends that could bring life-enhancing social contact into his life. Playing out the possibilities, we discussed ways to approach this issue or that challenge, and John was surprisingly verbal in articulating which things he could do something about and which things would be left up to others to decide. He had gotten the therapeutic messages.

John was given the names of several trusted colleagues he could see for additional treatment in his new home town. He promised he'd write or call with follow-up information once he settled into his new life.

22.7.5. Outcome

Almost 5 months later, I got a long handwritten letter telling me all that had happened. He said, 'I always remember that phrase, there's no one so powerful as the person on a mission, and I keep the word integrity in the front of my mind daily, almost hourly'. He said he was casually dating, and reassured me that his dating was 'nothing serious and, thankfully, nothing obsessive'. He never did call any of the referrals I gave him, but assured me if he felt himself 'getting weird again' he wouldn't hesitate to do so. He ended the letter with his thanks and appreciation for what I'd taught him.

To my surprise, I received a brief thank you note from his parents about 3 months after he moved out (2 months before John wrote to me). They filled me in on some of the details of his move. They said it was 'quick and painful, like pulling off a bandage, but things healed and John is doing well in his new job and seems happy with it, and also with himself'.

John had learned that you can't control other people, at least not in healthy ways. And, he had learned that sometimes you just have to 'take the hit', i.e. suffer the disappointment, rather than try to avoid it. These are vital life lessons to learn.

22.8. Conclusion

It is no coincidence that of the therapies with the greatest level of empirical support for their effectiveness in treating depression (cognitive-behavioral and interpersonal), *none of them* focuses on the past and *all of them* focus on helping depression sufferers build the skills that can empower them. In this chapter, I have emphasized the merits of hypnosis as a vehicle for teaching new skills, encouraging active experimentation with them in everyday contexts and using the feedback from life experience continually to adapt oneself to changing demands. Such teachings directly counter the popular psychologies that emphasize nondiscriminately 'trusting your guts' or 'living in the present', or thinking 'you can have it all' and countless other such global phrases that set people up to get hurt when they discover the hard way these principles don't apply in all (or perhaps even most) life situations.

Hypnosis can reasonably be considered the original 'positive psychology'. Anyone who applies hypnosis does so with the firm belief that people have more resources than they consciously realize, and that hypnosis can help bring these resources to the fore. Empowering people in this way is a natural component of an effective treatment for depression, for no one can overcome depression while feeling or behaving in a disempowered manner.

It is a terrible shame that hypnosis has been underutilized in the depression treatment process when it holds such great potential to catalyze therapy. Hopefully, as we continue to

learn more about the many pathways into depression, we will learn more about the many pathways out as well, including those involving skillful applications of hypnosis.

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CHAPTER 23

Hypnosis for health-compromising behaviors

Gary Elkins and Michelle Perfect

23.1. Introduction

Health-compromising behaviors represent a major source of preventable disease, and for this reason have been the focus of increased attention among health care professionals. Reductions in health risk behaviors include achieving reductions or cessations of behaviors that are harmful to health, such as tobacco use and excessive alcohol use. Modifying health-compromising behaviors can also include enhancement of behaviors to improve health, such as adherence to a healthy diet, increasing physical activity or weight reduction. However, changes in health behavior can be difficult to achieve, and more than a quarter of Americans are at increased risk for health consequences such as cancer, stroke and hypertension due primarily to health-compromising behaviors. Hypnosis is frequently sought, and has been applied to two significant health risk behaviors: nicotine dependence and obesity. There is a great need for interventions to modify the behaviors associated with nicotine dependency and obesity, and effective hypnosis treatments have the potential both to save lives and to improve the health care of many individuals who are at risk.

Cigarette smoking and use of tobacco products has been recognized as the leading preventable cause of death and disease in the USA,

and claims the lives of more than 430 000 individuals each year (US Department of Health and Human Services, 1999). Smoking is associated with a host of deadly diseases including lung cancer, chronic obstructive pulmonary disease, oral cancer, esophageal cancer, heart disease, stroke and high blood pressure (US Department of Health and Human Services, 1999). Further, it has been estimated that the number of tobacco-related deaths each year exceeds that of deaths due to AIDS, murders, alcohol, automobile accidents, drug abuse, fires and suicide combined (Centers for Disease Control and Prevention, 2002). Despite public information on the risks associated with tobacco products, over 65.5 million people living in the USA continue to use tobacco (either smoking or smokeless tobacco) on a regular basis (Centers for Disease Control and Prevention, 2002). Most people who smoke are aware that there are serious health risks associated with smoking, and as many as 80 percent of current smokers express a desire to stop smoking ((US Department of Health and Human Services, 1990). However, fewer than 5 percent are likely to be able to quit on their own without assistance (Fiore *et al.*, 1990).

Also, obesity has been associated with a wide variety of health problems. Obesity may be defined in terms of exceeding an established body mass index (BMI). The formula for BMI is: weight (in pounds) divided by height

Table 23.1 Classification of overweight and obesity by BMI

| Obesity class | BMI |
|---------------------|-----------|
| Underweight | <18.5 |
| Normal | 18.5–24.9 |
| Overweight | 25.0–29.9 |
| Obesity I | 30.0–34.9 |
| Obesity II | 35.0–39.9 |
| Extreme obesity III | >40.0 |

Source: National Institutes of Health/National Heart, Lung, and Blood Institute (1998).

(in inches) \times 704.5. BMI cut-offs for weight classification are presented in Table 23.1, with BMIs >30 indicating obesity.

Overweight status and obesity have been linked with heart disease, cancer, stroke, type 2 diabetes, sleep apnea, chronic pain, high blood pressure, high cholesterol and gallstones (Field *et al.*, 2002).

Health-compromising behaviors are difficult to modify because the behavior may have been reinforced through repeated positive or negative reinforcement. Modifications can require lifestyle changes that are difficult to achieve, and there may be ambivalence about change. This chapter reviews the literature to identify some of the key components related to effective assessment and hypnosis in the treatment of smoking and obesity. We discuss hypnosis interventions including how hypnosis may be integrated with other interventions to maximize clinical results. Case examples are presented to illustrate the authors' approach to treatment of these health-compromising behaviors.

23.2. Nicotine dependency

Given the popularity of hypnosis for smoking cessation, it is somewhat surprising that the clinical research into hypnosis for treatment of nicotine dependency has found mixed results for ITS efficacy. The success reported for hypnosis for smoking cessation ranges from as high as more than 80 percent (Crasilneck, 1990; Elkins and Rajab, 2003) to as low as 14 percent (Vermont

Lung Association, 1981). A part of the variability in outcomes may relate to the differences in intensity of the intervention and other factors related to treatment planning.

In general, minimal approaches to hypnosis involving only one or two sessions have reported cessation rates of only around 20 percent, while more intensive approaches garner higher rates of cessation. Much of the research has investigated a minimal approach to hypnotic intervention such as that developed by Spiegel (1970), in which simple direct suggestions for stopping smoking are given (i.e. 'smoking is a poison for your body; you need your body to live; etc.') following a brief hypnotic induction. Minimal interventions of one session or only a few sessions have been studied by several investigators (Spiegel, 1970; Pederson *et al.*, 1975; Stanton, 1978; Berkowitz *et al.*, 1979; Javel, 1980; Cornwell *et al.*, 1981; Rabkin *et al.*, 1984; Hyman *et al.*, 1986; Neufeld and Lynn, 1988; Williams, and Hall, 1988; Spanos *et al.*, 1992, 1995; Spiegel *et al.*, 1993). The findings regarding this minimal approach to hypnosis for smoking cessation have indicated outcomes that may be somewhat, but not greatly, superior to counseling alone or attention or other behavioral methods. For example, Rabkin *et al.* (1984) conducted a randomized trial comparing the hypnosis technique adapted from Spiegel (1970) with smoking cessation programs utilizing behavior modification, health education or a control conditions. Only self-report data were collected at 6-month post-treatment. Results indicated that 23 percent in the hypnosis group reported having stopped smoking and there was no significant difference between any of the groups. This finding was further reinforced by a comprehensive review of hypnosis for smoking cessation studies in which Green and Lynn (2000) also concluded that it seems apparent that minimal hypnotic interventions, such as that developed by Spiegel (1970), and group hypnosis interventions (Lynn *et al.*, 1993) achieve only around 20 percent or less abstinence.

Therefore, effective hypnosis intervention for smoking cessation may need to be intensified in some way to achieve better results. In fact, reports of more individualized and intensive approaches to hypnosis for smoking cessation

have indeed suggested that higher rates of smoking cessation might be achieved. Holroyd (1980) suggested that the likelihood of success for hypnosis in treatment of tobacco dependency may be significantly increased by an intense approach that includes: (1) multiple sessions; (2) individualized hypnotic suggestions; (3) individualized counseling with follow-up; and (4) an intense interpersonal relationship. This would be consistent with other interventions (Fiore *et al.*, 2000; Niaura and Abrams, 2002). To qualify as an intensive treatment, there must be a least a minimum of four sessions lasting more than 10 min each (Fiore *et al.*, 2000). For example, Crasilneck (1990) reported on an intensive, five-session hypnotherapy intervention that was provided on a one-to-one basis to 100 patients seen in his clinical practice. Smoking cessation rates of 81 percent were reported at a 12-month follow-up. A weakness of the study was that the data were based entirely on self-reports and did not meet the criteria needed for an empirically validated treatment (Chambless and Hollen, 1998). Also, it is likely that relying on self-reports alone leads to inflated rates of cessation (Fiore *et al.*, 2000). However, the report strongly indicated that an intensive approach to hypnotherapy might be highly effective. Also, Johnson and Karkut (1994) provided a clinical report of a hypnotherapy intervention that included multiple sessions and in which self-hypnosis practice outside the sessions was integrated into treatment. There was a self-reported smoking cessation rate of 87 percent at 3-month follow-up. However, a limitation of this study was that the results were based entirely on self-reports, there was no biologically confirmed measure of abstinence and no randomization to a control group.

Recently, many of these limitations were addressed in a controlled pilot study of intensive hypnosis for smoking cessation conducted by Elkins *et al.* (2007) that included careful randomization to control and treatment groups and biologically determined rates of abstinence. Smokers were randomly assigned to either an intensive hypnosis intervention or wait-list control. Abstinence was confirmed by expired carbon monoxide of 8 parts per million (p.p.m.)

or less, and any inconsistencies in self-reports and carbon monoxide readings were resolved with saliva cotinine measurement. The intensive hypnotherapy intervention was designed to provide:

1. Multiple sessions (the intervention involved eight sessions with hypnotic inductions at sessions 1, 2, 4 and 7).
2. Instruction in self-hypnosis (instructions for practice of self-hypnosis were given along with an audiocassette recording of hypnotic induction and suggestion).
3. One-to-one individualized counseling with follow-up visits (individualized counseling was provided on problem solving and emotional support).
4. Therapeutic interpersonal relationship (all sessions were conducted in individual sessions with a physician or psychologist with advanced training in clinical hypnosis).
5. Individualized hypnotic suggestions (hypnotic inductions were individualized based on patients needs and preferences but followed a general transcript. Suggestions were given for deepening relaxation, absorption in relaxing imagery, commitment to stop smoking, decreased craving for nicotine, post-hypnotic suggestions, practice of self-hypnosis and visualization of the positive benefits of smoking cessation).

Subjects were asked at each session for their preferences for specific imagery for relaxation and dissociation. The suggestions followed a transcript; however, the specific imagery for relaxation and the positive benefits for smoking cessation were individualized based upon questions to determine the patient's preference regarding such imagery.

As shown in Table 23.2, the rates of smoking cessation, as confirmed by carbon monoxide measurements, for the intensive hypnotherapy group was 40 percent at the end of treatment, 60 percent at 12 weeks and 40 percent at 26 weeks. Also there was a significant decrease in the number of cigarettes smoked (Fig. 23.1). Reductions in numbers of cigarettes smoked may be an important step for those smokers who fail to achieve abstinence, but later go one to stop smoking completely.

Table 23.2 Point-prevalence smoking cessation rates confirmed by carbon monoxide measurements

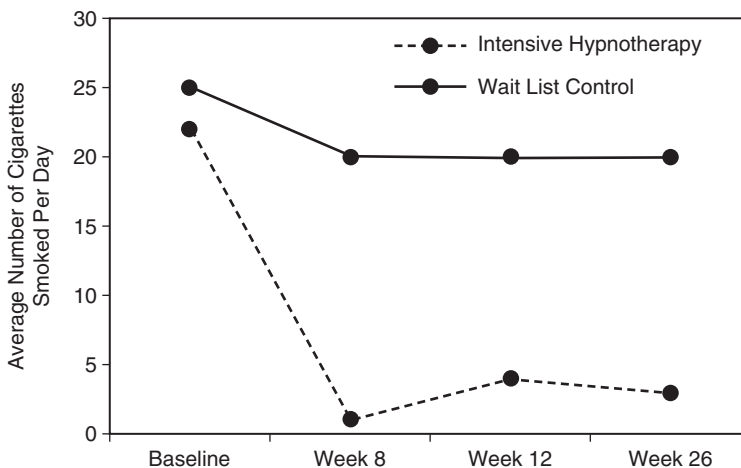
| Time after target quitting date | Percentage of subjects not smoking | |
|---------------------------------|------------------------------------|------------------------|
| | Control | Intensive hypnotherapy |
| 8 weeks | 10% | 40% |
| 3 months | 0% | 60%* |
| 6 months | 0% | 40%* |

* $P < 0.05$.

These results suggest that a more intensive approach to hypnosis can result in biologically confirmed abstinence rates of 40 percent or higher. In clinical practice it may be important to tailor interventions to the specific needs of the patient, such as addressing specific strengths, resources, dependency and mental status. Also, hypnosis may be integrated into a multimodal treatment plan including behavioral and pharmacological interventions. For example, hypnosis may be integrated with nicotine replacement or pharmacological interventions as needed to help smokers achieve their goals. The following sections discuss assessment and nonhypnotic interventions, and how hypnosis may be integrated with other interventions to achieve higher rates of abstinence.

23.2.1. Assessment of nicotine dependence

Assessment of patients for smoking cessation is important for treatment planning and may be completed by a clinical interview, self-report measures and review of medical records, and may include assessment of hypnotizability. It is important that the assessment be as comprehensive as possible and include past medical and psychiatric history. Patients who stop smoking are at risk for relapse in both the short and long term. Nicotine withdrawal is associated with a host of behavioral, subjective, physiological and biochemical changes that occur when nicotine is discontinued (Hughes *et al.*, 1990). Withdrawal symptoms include significant emotional stresses including: (1) dysphoric or depressed mood; (2) insomnia; (3) irritability, frustration or anger; (4) anxiety; (5) difficulty with concentration; (6) restlessness; (7) decreased heart rate; and (8) increased appetite or weight gain (American Psychiatric Association, 2000). It is especially important to determine if the patient has any pre-existing history of anxiety or depression, or concerns in that area. For example, Barabasz *et al.* (1986) found that depression was associated with outcome for hypnotic intervention and that some patients require treatment for depression in order to achieve abstinence. Also, it is equally important to monitor the

**Fig. 23.1** Number of cigarettes smoked.

patient's progress and mental status after cessation of smoking. Planning hypnotic interventions may be targeted toward helping the patient to manage and cope with these symptoms.

Ockene and colleagues (1999) recommend that the clinical interview include questions that assess these anticipated withdrawal symptoms and related issues: social support; mental status; and smoking history. Specific questions may include:

- ◆ How long have you smoked?
- ◆ How much do you smoke?
- ◆ Have you tried to stop in the past? What methods did you use? What was your experience with these methods?
- ◆ What withdrawal symptoms did you experience in past attempts to quit?
- ◆ To what degree do you believe you are addicted to nicotine?
- ◆ What social support do you have to stop smoking? How supportive are others for you to stop smoking?
- ◆ Does anyone else in your household/workplace smoke?
- ◆ Do you have any history of depression or anxiety?
- ◆ Do you believe your smoking or resuming smoking relates to stress?
- ◆ How confident are you that you will be able to stop smoking?
- ◆ Are you experiencing physical symptoms (i.e. shortness of breath, heart problems) related to smoking?
- ◆ What are your primary reasons for wanting to stop smoking?

Several questionnaires may also be useful in determining the severity of nicotine dependency, beliefs and expectations, and readiness to stop smoking. Although a detailed description is beyond the scope of this chapter, the following measures are recommended.

23.2.1.1. Nicotine dependency

The Fagerstrom Test of Nicotine Dependency (Heatherton *et al.*, 1991) is a 6-item questionnaire that provides an estimate of dependency and difficulty in refraining from smoking.

23.2.1.2. Beliefs and expectations

The Smoking Self-Efficacy Questionnaire (Colletti *et al.*, 1985) is a 17-item questionnaire that provides valuable information about the patients' beliefs about their ability to control their urges to smoke in a variety of environments.

23.2.1.3. Readiness to stop smoking

The Contemplation Ladder (Biener and Abrahams, 1991) is a measure of readiness to stop smoking. It employs a picture of a ladder, where each rung has an associated number that the patient is instructed to circle representing where he or she is in the process of stopping smoking. The ladder is based on the motivational model of Prochaska and DiClemente (1983) that postulates that a process of change occurs, ranging from pre-contemplation, to action, and maintenance. It can provide a useful estimate of the patients on a continuum from no desire to active involvement in smoking cessation efforts.

It may also be useful to gain an estimate of the patient's hypnotizability in planning hypnotherapy. Although hypnotizability has not been clearly established as a moderating variable in hypnosis for smoking cessation, it is reasonable to hypothesize that more highly hypnotizable individuals may be able to use hypnosis more effectively. While some studies have not found hypnotizability to predict effectiveness (Stanton, 1985; Holroyd, 1991), several studies have found a relationship between hypnotizability and abstinence (Basker, 1985; Baer *et al.*, 1986; Barabasz *et al.*, 1986). There are several brief measures that may be used for this purpose such as the Hypnotic Induction Profile (Spiegel and Spiegel, 1978) or the Stanford Hypnotic Arm Levitation and Induction Test (Hilgard *et al.*, 1979). Both measure take less than 10 min to administer and provide an estimate of hypnotizability that may be adequate for planning smoking cessation interventions. In our laboratory, we have used the Stanford Hypnotic Clinical Scale (Morgan and Hilgard, 1978–1979). This scale is based upon the longer Stanford Hypnotic Susceptibility Scales (SHSS; Weitzenhoffer and Hilgard, 1962) and takes approximately 20–25 min to administer, and includes suggestions for hands moving together,

a dream, a post-hypnotic response (throat clearing), ‘age regression’ and amnesia. A range of scores from 0 to 5 is obtained. If desired, a more in-depth assessment can be obtained with the SHSS:C (Weitzenhoffer and Hilgard, 1962); however, this scale is more time consuming and can take an hour or more to administer, making it less practical for clinical use.

Self-reports of smoking are generally sought pre-treatment, during treatment and at follow-up. Self-reports of abstinence and number of cigarettes smoked can assist the clinician in adjusting treatment plans and efforts, and identifying problem areas. For purposes of confirmed abstinence, biochemical markers of tobacco use are recommended. Common measures include thiocyanate (SCN), saliva cotinine and expired carbon monoxide (CO). SCN and cotinine are metabolites of nicotine and verify tobacco use over the past week. Expired carbon monoxide is a readily obtainable measure and indicates tobacco use over the past 24 h (for an in-depth review of biochemical verification measures, see the Society for Research on Nicotine and Tobacco Subcommittee on Biochemical Verification, 2002). Carbon monoxide levels above 8–10 p.p.m. is a standard indication of tobacco use.

23.2.2. Behavioral and pharmacological considerations in individualized hypnosis treatment planning

Counseling sessions are usually integrated with hypnosis and can include providing the patient with information about the effects of tobacco and the process of addiction (Fiore *et al.*, 2000; Kozlowski *et al.*, 2001). For example, nicotine withdrawal begins within 24 hs of quitting nicotine use and peaks within 48 h (Hughes and Hatsukami, 1986) and 2 weeks (Shiffman *et al.*, 1995). Physical withdrawal resolves after 1 month (Hughes, 1992), but increases in hunger and weight gain can persist as long as 6 months to a year (Hughes, 1992; Klesges *et al.*, 1997). Anticipation of these effects can provide the basis for problem solving and symptom management (Fiore *et al.*, 2000). Also, for some patients the use of chewing gum or other substitutes can help with withdrawal symptoms (Cohen *et al.*, 2001). Also, patients can be encouraged to

anticipate and avoid situations that are strongly associated with smoking, ask others not to smoke around them and begin regular exercise as adjunctive ways of coping (Ockene *et al.*, 1999; Dziegielewski and Eater, 2000).

Counseling can be directed at helping the patient understand their smoking behavior and areas that are most difficult for them. Smokers who stop smoking and then relapse should be encouraged to maintain and re-commit their efforts to complete abstinence. Throughout treatment and follow-up the clinician should express support even if the patient experiences relapse. It is generally recommended to reframe any perceived failure or relapse as a learning experience and that continued effort increases chances of success (Fiore *et al.*, 2000). For some patients, nicotine fading (McChargue *et al.*, 2002) can be considered as an alternative to stopping ‘cold turkey’. Nicotine fading involves a gradual reduction of numbers of cigarettes smoked to 5–10 per day and then setting a quit date for complete abstinence (Ockene *et al.*, 1999).

Also, nicotine replacement therapy (NRT) can be used along with hypnosis to help with withdrawal symptoms (Glover and Glover, 2001). NRT can decrease the severity of withdrawal symptoms by providing a steady and slow dose of nicotine through an alternate administration route (Jarvis and Sutherland, 1998). Consistent with the *Clinical Practice Guidelines* (Fiore *et al.*, 2000), nicotine replacement products (e.g. gums, patches, inhalers, etc.) as well as certain antidepressant medications (e.g. bupropion-SR) should be considered as ‘first-line’ medications for treatment of nicotine dependency.

Nicotine Polacrilex (gum) is available in 2 or 4 mg doses (Fiore *et al.*, 2000), and use is recommended for 3 months (Hatsukami and Lando, 1999); it can be used on an as-needed-basis. The nicotine patch provides absorption that is slower than with the nicotine gum (Jarvis and Sutherland, 1998) and is available in either 24 h (Habitrol, Nicoderm or Nicoderm CQ) or 16 h doses, resulting in peak levels of nicotine within 4–9 hs after administration (Hatsukami and Lando, 1999). The nicotine patch provides a passive means of nicotine delivery that may be preferred by some patients. In contrast,

the nicotine inhaler provides oral and tactile sensation because it consists of a mouthpiece and nicotine cartridge (Hatsukami and Lando, 1999; Ockene *et al.*, 1999). Therefore, the nicotine inhaler may be preferred by patients who want the behavior and sensations associated with the inhaler. Other methods for nicotine replacement include a nicotine nasal spray and lozenge (Fiore *et al.*, 2000) that may be considered. In general, NRT may be recommended for heavily dependent smokers or those that have benefited from its use in the past.

Another medication that should be considered for some patients is bupropion (Zyban). Bupropion is an antidepressant medication that has been shown to aid in the management of withdrawal symptoms (Johnston *et al.*, 1999) and prevent relapse. The mechanism by which bupropion is effective is not completely known; however, it is presumed to block the neural reuptake of dopamine or norepinephrine (Fiore *et al.*, 2000). It is the only nonnicotine medication approved by the FDA for smoking cessation (Fiore *et al.*, 2000). Given the anti-depressant effects, it may be especially considered for patients at risk for depression before or following smoking cessation.

23.2.3. Case example

The following clinical case illustrates an intensive hypnotherapy approach to treatment of nicotine dependency that includes assessment and consideration of counseling and pharmacological interventions in treatment planning. The patient, 'Jane' was a 59-year-old Caucasian female retiree who was referred by her cardiologist for evaluation and consideration of hypnotherapy for smoking cessation. Jane presented with a sense of urgency that she 'knew she needed to stop smoking' and that 'all of her physicians had urged her to stop smoking'. She reported that she 'enjoyed smoking', but that it was having a negative impact on her health and that she felt her health would continue to decline if she was not able to quit. A review of her medical record revealed that she had continued to smoke 'quite heavily' and that at her last visit with her cardiologist she had been told by her physician that 'we need to pull out all the stops' and spent an extensive amount of time in the office discussing with her

the continued risks of smoking. Specifically, Jane had medical problems related to her smoking that included coronary artery disease, peripheral vascular disease and hypertension. She also had a history of abdominal aortic aneurysm (AAA), and 3 years previously had had bypass surgery for the AAA. Also, she reported early signs of chronic obstructive pulmonary disease (COPD) manifested by shortness of breath when walking a block or less. She had been married for 38 years and stated that her husband was also a smoker. She discussed her need to stop smoking with her husband and he was willing to 'not smoke around her' and would keep his cigarettes 'outside the house' if she was not smoking.

Also, during the intake session, Jane indicated that she had the support of her two daughters (ages 36 and 33) and three grandchildren (ages 15, 11 and 10), all of whom did not smoke and lived near her. Jane stated that she had tried to quit smoking numerous times in the past and at most had been able to stop smoking for only about 1 month, but then started back smoking 'because of stress' related to her work as a secretary. She stated that her most successful attempt was when she had tried using nicotine patches about 3 years ago. She stated that she felt the patches were helpful; that she did stop smoking while using the patch; but that 'it irritated (her) skin' and she felt that she could not effectively use the nicotine patch for that reason. More recently, she had been prescribed Zyban (bupropion-SR) about 8 months prior to the present consultation. She stated that she did not stop smoking while using Zyban and that she took it for less than a month. She did not feel that it was helpful to her and did not want to use that medication at this time. A mental status examination was completed and she strongly denied any feelings or symptoms of depression and no emotional concerns other than worry about her health. She had no complaint about her sleep, appetite or mood, and she did not drink alcohol or have any history of drug use. A smoking history was completed and Jane reported that she began smoking when she was 15 years old and that by age 18 she was smoking a pack of cigarettes (20 cigarettes) a day. She stated that by age 35 she was smoking about two packs or more a day (40–50 cigarettes). She indicated that she 'had been trying to cut down'

and was currently smoking a pack and a half (30 cigarettes) or less per day. She was asked to exhale into a CO monitor and to complete the Fagerstrom Test of Nicotine Dependency. Results revealed a CO reading of 44 p.p.m. (confirming heavy smoking) and a Fagerstrom Test score of 10, indicating a high level of nicotine dependence. Her score on the Contemplation Ladder indicated that she was between a conceptual and action stage of readiness for change in her smoking behavior. She also rated on a scale of 0–10 that she had a strong desire to take action to stop smoking and was mild to moderately confident in her ability to control urges to smoke. She stated that it was a primary concern for her to ‘control the nervousness and cravings’ after cessation. Hypnotizability was assessed using the Stanford Hypnotic Clinical Scale and she scored a 4 (out of 5), indicating a moderately high level of hypnotic ability. She had no previous experience with hypnosis or other mind–body interventions such as relaxation therapy or meditation.

Jane was provided with information about the use of hypnosis, including a discussion of the myths and misconceptions about hypnosis. It was emphasized that the goal of hypnosis was to empower her to cope with withdrawal symptoms, reinforce her commitment to smoking cessation and reduce cravings. It was discussed that a multimodal approach including multiple sessions, counseling, problem solving and any adjunctive treatments would help to address the behavioral, social and physiological aspects of nicotine dependency. Jane agreed to a treatment plan that included at least 8–10 sessions (more or less as needed) over a 2-month period. A quit date was set for the next session (session 2) and she agreed to remove all tobacco products (cigarettes, lighters, ash trays) from her home. She agreed to ask her husband to avoid smoking in her presence (which he had already agreed to do) and to discuss her efforts with her daughters to enlist their support. The ongoing process of assessment and modification of the treatment plan was discussed as a way to address any unanticipated barriers to achieving complete abstinence. She was asked to obtain an audio-cassette tape player to have ready to use when a self-hypnosis tape was provided to her at a later session. She really preferred not to use nicotine

patches or replacement as she felt she could ‘do it without them’ and she had experienced a skin irritation from the patches in the past; however the benefits of NRT were discussed and it was agreed that she would consider it if she had any difficulty with abstinence after three sessions. She stated that she was primarily concerned with stress management. Preferences for mental imagery were also discussed. Jane identified her memory of vacationing at a lake with her family as especially pleasant for her. She identified her desire to ‘be around to see the grandchildren’ as a primary motivation to stop smoking, and it was discussed that these preferences could be included in the hypnosis sessions.

Jane came for her second session 7 days later and arrived on time accompanied by her husband and one daughter. She reported being compliant with the previous recommendations to get rid of tobacco products and that she had not smoked for 24 h prior to the appointment. Her husband and daughter expressed their support to help keep tobacco products out of their house and their willingness to provide emotional support such as encouragement and phone calls to the patient. Questions were answered and a hypnotic induction was completed following a standard transcript (Elkins and Rajab, 2003) and integrating the patients preferences for imagery that may be summarized below:

1. *Eye-focus induction.* ‘Begin by focusing your attention on a spot on the wall. As you concentrate, begin to feel more relaxed. Concentrate intensely so that other things begin to fade into the background. As this occurs, noticing a relaxed and heavy feeling and allowing your eyelids to close.’
2. *Relaxation.* ‘Noticing a “wave of relaxation” that begins at the top of your head and spreads across your forehead, face, neck and shoulders. Every muscle and every fiber of your body becoming more and more completely relaxed. More and more noticing a feeling of “letting go” and becoming so deeply relaxed.’
3. *Comfort.* ‘... and as you become and remain more relaxed, finding a feeling of comfort. Feeling safe and secure. A peaceful feeling, calm and secure. Feeling so calm that nothing bothers or interferes with this feeling of comfort.’

4. *Mental imagery for relaxation.* 'As you can hear my voice with a part of your mind, with another part going to a place where you feel safe and secure. A place where you become so deeply relaxed that you are able to respond to each suggestion just as you would like to, feeling everything you need to feel and to experience. Seeing that you have come to the most pleasant place where you can feel relaxed and breathe well. You are near a beautiful lake with your family. You can see you husband and daughters. Now you can feel the arms of your three grandchildren around you. And feel a sense of love and belonging. Feeling calm and relaxed and loved. And as you are in this calm and positive place it is time to become a nonsmoker
5. *Commitment for smoking cessation.* '... Today becoming a nonsmoker, becoming free from nicotine and free from cigarettes ... you will not smoke cigarettes or use tobacco again. With each day that passes your commitment to remain free from cigarettes will become stronger and each time you enter this relaxed state you will remember the reasons you want to stop smoking. You will find an image of your grandchildren coming to your mind, and you will find a strength from this so that the positive feeling will be stronger than any cravings for cigarettes. You will remember the threat cigarettes pose to your health and your ability to take care of your grandchildren. You will not smoke again, not even a puff'.
6. *Dissociation from cravings.* 'As you enter an even deeper level of hypnosis, you may notice a floating sensation, less aware of your body, just floating in space. Your body floating in a feeling of comfort and your mind, just so aware of being in that pleasant place. Really becoming absorbed in being at the lake with your family and allowing the relaxation to become more complete. All the way deeply relaxed and entering the deepest level of trance so that you can notice a change in sensations. Noticing a floating feeling ... just drifting and floating deeper and deeper, relaxed. As your body floats, you will not be bothered by craving nicotine. Your mind blocks from conscious awareness any cravings and you can feel more detached from your body as you become more relaxed'.
7. *Post-hypnotic suggestions.* '... and as you become and as you remain free from nicotine and free from cigarettes, you will find a sense of satisfaction and accomplishment. You will find that, more and more, you are able to sleep very well, your sense of smell will improve, and your sense of taste will improve. You will not eat excessively and you will find an appropriate amount of food to be satisfying to you'.
8. *Self-hypnosis.* 'each time you practice self-hypnosis or listen to the tape recording that I provide to you, you will be able to enter a very deep state of relaxation, just as deep as you are today ... and within this relaxed state, you will find a feeling of control. You will be able to become so deeply relaxed that you will become very comfortable and you will be able to have a feeling of dissociation that keeps from conscious awareness any excessive craving for nicotine. Within this relaxed state your commitment to remain free from cigarettes will become even stronger and you will find a kind of strength from your practice of self-hypnosis'.
9. *Positive imagery for benefits of smoking cessation.* '... now, seeing yourself in the future as a nonsmoker, free from nicotine and cigarettes. Notice all of the good things going on around you, how healthy you feel, and ... you can again feel the arms of your grandchildren around you ... notice that your breathing is better ... and you are finally free from cigarettes and able to take good care of your health and good care of those around you that you love. Seeing how well you are able to feel and you will not smoke, no matter if times become stressful or difficult. You will be able to remain calm and relaxed, both now and in the future'.
10. *Alerting.* 'Returning to conscious alertness as a nonsmoker. Returning to conscious alertness in your own time and your own pace, in a way that just feels about right for you today. Feeling very good,

normal, with good and normal sensations in every way as you return to full conscious alertness.

Jane was then given an audiocassette recording of a similar hypnotic induction and individualized mental imagery for relaxation and smoking cessation. She was told to practice with the tape at least once a day and to use the tape to facilitate a relaxed and calm feeling whenever she needed to reduce cravings or withdrawal symptoms. She was reminded that withdrawal symptoms generally peak within approximately 2–14 days and that the cravings ‘will always pass’, and that each time she would ‘grow stronger’ and gain greater control and freedom from cigarettes.

At the third session, Jane reported that she was practicing with the tape recording every day. She stated that she especially enjoyed using it at night and that she felt that she was sleeping better. However, she further stated that she had initially stopped smoking and had gone for 5 days without a cigarette. She stated that she had resumed smoking about 10 cigarettes a day. She was congratulated on her efforts for being able to stop smoking for the 5 days. It was discussed that nicotine replacement may be helpful if she continued to have difficulty with abstaining. She stated that she really did not want to use the nicotine patches but she would be willing to use nicotine gum if she needed it. However, she stated that she felt that she could stop smoking completely without using nicotine replacement and that her husband was supportive and almost always smoked outside the house but had left a pack of cigarettes in the living room. She was encouraged to set another quit date and to make sure that there were no cigarettes at all in her home. Also, problem solving included a plan if she found any cigarettes at home. She agreed that if she ‘came across’ any cigarettes that she would call her daughter who would come to the house and remove them. She felt that she had been coping well with most withdrawal symptoms except for cravings. Therefore, she was further instructed in the use of self-hypnosis with and without the tape to reduce and manage symptoms of craving. She was again reminded that the ‘cravings would always pass’ and it was suggested to her that the

cravings would ‘fade to the background’ as she was able to enter a deep level of trance and relaxation during her hypnosis sessions in the office or at home. A hypnotic induction was completed and she was encouraged to call for an earlier appointment if she was having difficulty.

During the fourth session, Jane reported that she had not smoked at all since the last session. She was congratulated on her progress. She indicated that she still had cravings for cigarettes, but that her family had been supportive. She was reminded that the cravings would pass and become less intense with time. The remainder of the session was spent discussing the health benefits and the physical necessity of her ‘remaining free from cigarettes’. She was informed that if she did smoke a cigarette that it would not be a ‘failure’ and that she should persist and continue ‘on the path of health and freedom from cigarettes’. She was asked about any specific mental imagery or suggestions that she thought might be helpful to her, and she identified suggestions to ‘breathe slow and deep’ and sitting in a recliner with a warm blanket around her. Those images were integrated into the hypnotic induction that was completed at that session.

Sessions 5–8 began by asking Jane how she was progressing with abstinence from cigarettes and with her exhaling into a CO monitor to show her how her CO levels were decreasing. The CO readings decreased from 12 to 8 p.p.m. over the sessions, indicating that she had gone from significantly reduced smoking to complete abstinence. She discussed that the support of her daughters had been especially helpful to her. She reported continuing to practice hypnosis with the tape recording but by the sixth session stated that she was ‘able to do it without the tape’, and she was congratulated on her transition to using self-hypnosis. She stated that she had put a ‘no smoking’ sign on the front door of her house and that had been helpful in reminding her husband and others to keep tobacco products out of the house. A hypnotic induction was completed at each session consistent with the above description. Her history of resuming smoking during times of stress was also discussed. Since she was retired, stress associated with work was no longer an issue for her; however, she did identify stresses associated with family issues and her health. Ways of coping

with stress were discussed, including removing herself from situations when appropriate, assertiveness and ‘standing up for herself’, taking deep breaths, asking for what she needs from others, and continuing to use hypnotic relaxation with or without the tape. At the end of session 8 (2 months after the first session), appreciation was expressed to Jane for her accomplishment and she was encouraged to ‘see herself as a nonsmoker’ and that ‘smoking would not be an option even if times became stressful in the future’. She was reassured that she could call for an appointment at any time and she was scheduled for two ‘booster sessions’ at 1 and 3 months later.

At the 1-month follow-up, Jane reported that she had ‘mostly’ remained abstinent from cigarettes. She stated that she had become upset when one of her grandchildren had been hurt and was taken to the emergency room after a fall. She stated that she had obtained one cigarette from a friend but had only smoked about half of the cigarette and then decided that she ‘didn’t need it.’ The CO monitor reading was 10 p.p.m. at that session. A hypnotic induction was completed emphasizing relaxation and visualizing coping with stressful situations such as an illness in the family. At the 3-month follow-up visit, Jane reported that she felt that she was in fact a ‘nonsmoker’ and that she felt more able to do things with her grandchildren as her breathing was better. The CO monitor validated her abstinence with a reading of 8 p.p.m. Aspects of the treatment that she felt were most helpful were discussed, and she was encouraged to return for ‘booster sessions’ as needed in the future.

23.3. Obesity and eating behaviors

One of the primary reasons that eating behaviors are an important area to target for intervention research is because of the significant implications of obesity and disordered eating behaviors on health. Clinical treatment for obesity across the lifespan is increasingly sought out, including programs that include hypnosis interventions. Estimates are that 31 percent of adults in the USA are obese (BMI >30), and in

addition more than 34 percent are overweight (BMI 25–30) (Flegal *et al.*, 2002). The Centers for Disease Control and Prevention (2002) released a report citing obesity as a ‘public health epidemic’. Obesity has been linked to numerous physical problems as it is estimated that each year up to 325,000 deaths are linked to obesity (Allison *et al.*, 1999). In addition, psychological issues such as low self-esteem, being teased about one’s weight and societal prejudice have been associated with obesity (Wadden *et al.*, 2002). Obesity is not a psychiatric disorder and is not listed as an eating disorder in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; American Psychiatric Association, 1994); however, binge eating is often noted as a dysfunctional eating behavior (Stunkard, 2002) among obese individuals. This point is noteworthy because *binge eating disorder* has been proposed as a new entry into the DSM, and up to 40 percent of individuals with binge eating habits are obese (Johnson and Torgrud, 1996). Also, binge eating disorder has been associated with higher rates of depression, anxiety and alcohol dependence. In evaluating obese patients for treatment, it is important to inquire about eating behaviors, including binge eating, and any co-morbid psychological disorders.

Hypnosis as an intervention for individuals with disordered eating behaviors and obesity has received considerable clinical attention and is often cited in the popular media. This section will highlight clinical considerations for treatment of obesity, evidence regarding hypnosis interventions for obesity and planning hypnosis treatment protocols. Also, a multimodal intervention for the treatment of obesity will be illustrated in a case example.

23.3.1. Clinical considerations for treatment of obesity

Obesity is a chronic condition that develops as a result of an interaction between a person’s genetic predisposition and his or her socio-cultural context (Platt, 1995). Despite the challenges posed by genetic factors, weight reduction primarily consists of modifying behaviors, including reducing health-compromising behaviors. Eating behaviors can be viewed along

a continuum, in which there are individuals who have healthy habits and there are others who engage in eating behaviors that could compromise their physical as well as their mental well-being. Prior to the start of any intervention, it is essential that clinicians assess for the existence of an eating disorder. Different types of eating disorders may warrant specialized services with trained providers.

An underlying mechanism of obesity has often been attributable to food addictions, placing it in a similar category to tobacco and alcohol (Wadden and Anderton, 1982). However, in contrast to those two health-compromising behaviors, people cannot abstain from eating (Platt, 1995). When considering whether a hypnosis component might be effective in the treatment of a presenting problem, it is important to determine whether the behavior is voluntary or involuntary. For example, volitional behavior, such as smoking or eating, might vary in its response to hypnosis relative to problems that are under less conscious control, such as pain. Therefore, it is important for clinicians to understand that obesity should be viewed as a complex problem with multifarious causes that each need to be targeted. There are certainly aspects of eating behavior that can be considered less volitional, such as food cravings or hunger pangs. However, eating behavior is best characterized by self-initiated actions influenced by external cues (Wadden and Anderton, 1982).

One form of modification might be through dietary control that includes selection of healthy food choices or consumption in moderation. One study (Logue *et al.*, 2004) found that individuals who consistently practiced food portion control over a 2-year time period lost 5 percent or more of their baseline weight. In contrast, patients who did not consistently practice portion control gained 5 percent or more of their baseline weight. In particular, the effectiveness of *dietary control* is tied to the feasibility of maintaining the lifestyle adjustments throughout a person's life rather than solely for the purpose of achieving weight loss.

Most professionals would agree that in order to achieve weight loss, individuals must modify their eating habits (e.g. Logue *et al.*, 2004). Typically, interventions include some behavioral components such as dietary recommendations,

self-monitoring by keeping a journal of eating behavior, and exercise (Wadden and Foster, 2000). Such interventions can produce initial weight losses of 1–2 lbs per week (Wadden and Foster, 2000), and the addition of a very low calorie diet (800 kcal/day) or a restricted portion-control diet can increase total weight loss by 30 percent or more (National Task Force on the Prevention and Treatment of Obesity, 1993; Jeffery *et al.*, 2000). A primary problem with most weight loss programs is not the lack of initial results, but rather the fact that approximately one-third of those who lose weight gain it back within the year and almost everyone gains the weight back within 5 years (Fawzy *et al.*, 1983). As a result, the longer a person remains involved in an intervention and support program, the more likely it is that greater and more long-lasting weight losses will be achieved (Perri *et al.*, 1989). Therefore, it is recommended that treatment interventions for obesity extend over 6–12 months (National Institutes of Health/National Heart, Lung, and Blood Institute, 1998). More short-term interventions (i.e. lasting one or two sessions) are less likely to be effective.

Fawzy *et al.* (1983) highlighted the literature regarding several behavioral methods, most of which are still employed in weight reduction programs. Such methods include *self-control*, *covert modeling* or *aversive techniques*. Self-control strategies involve self-monitoring (e.g. maintaining a diary), self-reinforcement (e.g. treating oneself to a reward for attempts and successes at curtailing poor eating habits) and stimulus control (e.g. eating in the same place each day).

The addition of cognitive components has been found to be effective for identifying, discussing and modifying distorted thinking and emotional dysregulation that fosters disordered eating (Gilliland and James, 1983). Such elements might include *cognitive restructuring* (identifying faulty beliefs and modifying irrational beliefs) or *problem-solving training* (Gilliland and James, 1983; Sanders, 1986). For example, Perri *et al.* (2001) found that the addition of a problem-solving component to behavior therapy demonstrated significantly better long-term maintenance of lost weight than behavior therapy.

Before deciding which components should be employed in an intervention targeting weight loss and healthy eating behaviors, it is important to conduct a thorough assessment to determine what might be most suitable for a particular individual. It is important to gather baseline data to determine appropriateness for a given intervention and readiness for change. Clearly, being overweight does not necessarily equate with disordered eating. Individual differences in weight have been attributed to genetic predisposition. Such evidence has been grounded in twin and adoption studies (Platt, 1995). Baseline measurement should include calculation of BMI, waist circumference and risk status (National Institutes of Health/National Heart, Lung, and Blood Institute, 1998). Also, it is important to understand that despite having established guidelines for determining healthy ranges for weight, BMI and waist circumference, there are several societal factors that can influence acceptable weight parameters (Platt, 1995). For instance, many communities encourage thinness for aesthetic reasons; however, in some cultures a larger body size is viewed as representing health and power (Platt, 1995). In addition, eating behavior can also be triggered by emotional experiences. Likewise, stress can be an important factor, especially in regard to binge eating (Faith *et al.*, 1997). Therefore, hypnotic interventions that emphasize relaxation and stress management may be an important component of intervention.

Another important area to evaluate is the level of the individual's motivation for modifying eating behaviors and achieving weight loss (Logue *et al.*, 2004). A clinical interview should determine underlying issues that might be contributing to difficulties with weight management. These domains include: psychological (e.g. low self-esteem, feelings of inadequacy or lack of control, mood disturbances), interpersonal (dysfunctional family relationships, history of peer teasing, maltreatment history) and socio-cultural (e.g. cultural pressures toward a particular body type, cultural norms for physical appearance; e.g. Cochrane, 1992; Platt, 1995).

Yet another consideration for the clinician is whether to evaluate hypnotizability. There have been equivocal findings pertaining to the role of hypnotizability and weight loss success.

The mixed results can at least in part be attributable to issue of voluntary versus involuntary behaviors. However, also contributing to the variable findings has been the timing of administration and the instrument used to assess hypnotizability. For instance, one small single-group study (Deyoub, 1979) did not find a relationship between scores on the 12-item Harvard Group Scale of Hypnotic Susceptibility (Shor and Orne, 1962) and weight loss following participation in an 8-session hypnotherapy group intervention (Deyoub, 1979).

The Barber Suggestibility Scale (BSS; Barber, 1965) was used to measure hypnotizability in three studies. Deyoub and Wilkie (1980) found that BSS scores were significantly related to the degree of weight loss experienced by those who participated in the hypnosis intervention, but not correlated with weight loss among those whose treatment did not include a hypnosis component. The researchers speculated that administering the BSS prior to conducting the intervention established an expectancy set. Accordingly, individuals who scored low on the BSS and were participating in the hypnotic intervention condition may have been discouraged about the potential for the hypnosis to benefit them, whereas individuals who scored high on the BSS may have been reliant on the suggestions to change their behavior (rather than viewing hypnosis as a facilitative tool; Deyoub and Wilkie, 1980). In contrast, another study (Cochrane and Freisen, 1986) did not find a significant relationship between the BSS (Barber, 1965), also administered prior to treatment, and weight reduction. However, there was wide within-group variability and the data on hypnotizability and weight loss were not examined specific to the hypnosis condition (Cochrane and Freisen, 1986). Nonetheless, data from a study conducted by Wadden and Flaxman (1981) also did not support a significant association between weight loss and the BSS, which had instead been administered at the final treatment session.

The SHSS is widely considered the 'gold standard' for measurement of hypnotizability (Kallio and Revonsuo, 2003). One study (Andersen, 1985) examined the association hypnotizability (measured with the SHSS:A (Weitzenhoffer and Hilgard, 1959)) and weight loss following

participation in eight individual hypnosis sessions and 3-month post-intervention follow-up (during which time participants had been instructed to practice self-hypnosis). The results indicated a statistically significant positive association between degree of hypnotizability and success at weight reduction (Andersen, 1985). In their study, Barabasz and Spiegel (1989) also considered the impact of hypnotizability using the SHSS:C (Weitzenhoffer and Hilgard, 1962). Weight loss for the individuals who received individualized hypnotic inductions was significantly correlated to scores on the SHSS; however, hypnotizability was not related to weight loss following participation in a behavioral treatment or a hypnosis intervention that included only general suggestions (Barabasz and Spiegel, 1989). Consideration of what elements, such as individualization, will be discussed in the following section.

23.3.2. Hypnosis interventions for obesity

Studies examining the effectiveness of hypnosis in the treatment of obesity have either reported on hypnosis as a single treatment or as a part of a multimodal cognitive-behavioral intervention (Vanderlinden and Vandereycken, 1994). In general, there is little empirical support for hypnosis as the only or primary therapeutic tool (Stewart, 2005). However, hypnosis may be an effective addition to a cognitive-behavioral treatment plan (Kirsch *et al.*, 1995; Kirsch, 1996). Given the complexity of obesity and eating behavior and the influence of environmental and genetic factors, it is not surprising that hypnosis by itself has been found to be a relatively ineffective treatment. In fact, there is little support for *any* single treatment (Wadden and VanItallie, 1992; Foreyt and Goodrick, 1993; Kirschenbaum, 1994; National Institutes of Health/National Heart, Lung and Blood Institute, 1998). In utilizing hypnosis, it is important for clinicians to discuss clients' perceptions of how hypnosis can be beneficial and clarify any misconceptions that hypnosis might 'cure' obesity.

Most studies have examined the added benefit of a hypnosis component to behavioral modification programs. In one of the most

well-controlled studies in this area, Bolocofsky *et al.* (1985) examined the differential benefit of a behavioral weight loss program with a hypnotic induction compared with just the behavioral treatment among 109 individuals aged 17–67. Individuals who participated in both conditions lost a significant amount of weight compared with baseline. However, adding hypnosis to the behavioral regime appeared to contribute to continued weight loss. Those who received both the behavioral and hypnosis components were found to have lost significantly more weight at the 8-month and 2-year follow-up visits compared with those who had participated in the behavioral treatment condition.

Hypnosis has also been used in combination with the behavioral intervention referred to as '*covert modeling*'. Covert modeling involves asking clients to use their imagination, visualizing a particular behavior as the therapist describes the imaginary situation in detail. A study conducted by Bornstein and Devine (1980) provided support that the adjunct of hypnosis to a covert modeling intervention contributed to initial weight loss and weight maintenance. The average weight loss was significantly greater among individuals who participated in the multimodal approach (i.e. covert modeling plus hypnosis condition) than among individuals who participated in the no-model control condition; weight loss did not differ between participants in the other conditions (i.e. covert modeling only treatment, minimum treatment condition). In addition, the individuals who had participated in the covert modeling plus hypnosis maintained their weight loss for at least 3 months post-treatment, though there was no further weight loss.

Although having significant ethical implications, some professionals have suggested that *aversive techniques* may facilitate weight reduction. Overt aversion involves introducing an aversive stimulus when an individual engages in an undesirable behavior. Johnson and Karkut (1996) examined weight loss differences between 86 women who participated in a hypnosis-only condition and 86 women who participated in a hypnosis plus overt aversion condition (electric shock, taste and smell aversions, and individualized aversions). The hypnosis component consisted of a 90-min audiotaped induction,

which participants were instructed to listen to on-site and then use it to continue practicing self-hypnosis at home. The recording included general imagery, suggestions regarding negative effects of certain foods or eating excessively, suggestions for self-esteem building, and dietary control recommendations. In addition to the hypnosis component, the aversive condition involved coating desired foods with vinegar, disgusting imagery targeting food cravings, and electric shock. All participants engaged in a discussion regarding a low-calorie diet. Members in both treatment conditions weighed significantly less at post-treatment and 1-month follow-up compared with baseline, but the average weight loss was similar between conditions. Interestingly, 40.7 percent of the participants in the hypnosis-only condition received six on-site hypnosis sessions, whereas 38.4 percent of the individuals in the hypnosis plus aversion condition received four on-site sessions, and everyone who participated in the latter condition declined further aversive therapy (Johnson and Karkut, 1996).

One of the key elements of hypnosis interventions is the importance of individualizing the induction with suggestions relevant to the patient. In a controlled study of hypnosis for treatment of obesity, Barabasz and Spiegel (1989) examined weight differences among 45 individuals who received (1) individualized hypnotic inductions in addition to self-management treatment; (2) self-management plus hypnosis without individualization; or (3) a self-management-only treatment condition. Individuals who received individualized hypnotic inductions lost significantly more weight compared with those who participated in the self-management treatment.

In an attempt to determine if the focus of hypnosis has an impact on weight loss, Stradling *et al.* (1998) conducted a study in which patients from a sleep disorders clinic were assigned to one of three conditions: (1) dietary advice only; (2) dietary advice plus hypnosis focused on stress reduction; and (3) dietary advice plus hypnosis focused on suggestions specific to food. The hypnosis components consisted of one 30-min individual session, one 30-min group session and an audiocassette with a taped induction to practice self-hypnosis at home. The researchers noted that they included two hypnosis groups, one focused on food and one

targeting more general stress due to the impracticality of devising a 'sham' hypnosis control group. The results indicated that the adjunct of hypnosis focusing on stress reduction contributed to greater weight loss compared with those in the other two conditions. These findings surprised the researchers as they had expected the hypnotic induction specific to food to contribute to greater weight loss; however, it was explained that stress management using hypnosis may have helped relieve some of the tension underlying eating behaviors (Stradling *et al.*, 1998).

There is some persuasive theoretical and empirical evidence that individuals with stronger initial beliefs about the success of a given intervention might be more likely to experience an actual reduction in the targeted problem area (Schoenberger, 2000). The potential importance of *cognitive expectancies* in a hypnosis intervention was explored in a study by Wadden and Flaxman (1981) in which they examined hypnotizability in addition to *cognitive expectancies* for the hypnosis intervention. In their study, the hypnosis intervention included a hypnotic induction, positive expectancy for the effectiveness of hypnosis, direct suggestions for weight loss, rehearsal and requests to practice self-hypnosis twice daily for 10–20 min (without further instructions on this process). There was no difference in the amount of weight lost between individuals who received the hypnosis intervention and individuals who participated in one of two other treatment conditions (covert modeling treatment or a relaxation-attention control). The data also did not support a significant association between weight loss and hypnotizability. The strongest predictor of weight loss (regardless of the type of intervention) was the measure of expectancy for treatment success.

Related to expectancies are interventions that enhance participants' belief or confidence in the intervention. One investigator (Goldstein, 1981) postulated that the benefit of a hypnosis intervention for weight loss could be enhanced by *strengthening participants' beliefs* that they were actually in a trance state. Although it could also be viewed as a limitation, with the investigator also being the clinician for all participants, the study also most probably reflects treatment employed in 'real-world' clinical settings.

In order to test the author's hypothesis, women were assigned to participate in one of three conditions: (1) behavior modification; (2) hypnosis intervention without a structured experience; or (3) hypnosis intervention with a specific experience (i.e. hand levitation) as a demonstration of trance. The suggestions made in both hypnosis intervention conditions were similar to those presented in the behavior modification program, except that the suggestions were made as part of the inductions and these participants were also given exercises (e.g. *instructions to visualize herself as thin, to increase her metabolic rate, to focus on feelings of pride for adhering to her diet*). For individuals in the hypnosis with the experience condition, suggestions for hand levitation were administered individually to participants during the second or third session. Women in the hypnosis with arm levitation lost significantly more weight by 6 months than women in either of the other two conditions. Moreover, although only a subset of the sample, it appears that the average weight lost at 6 months among those who experienced successful arm levitation (mean = 41.7 lbs) was significantly higher than the weight loss from those who did not experience successful arm levitation (mean = 19.7 lbs; Goldstein, 1981).

The findings of the aforementioned study (Goldstein, 1981) underscore important considerations for including hypnosis components in interventions for obesity. It is important to note, however, that data were only based on participants who completed at least four sessions, although there were relatively equal numbers (four or five) who did not complete the minimum number of sessions. However, there were no data to indicate the rate of attrition according to the treatment condition beyond the initial drop-out, which has implications for interpretation of what the author referred to as '6-month data' since they included the weight of participants from any point between the fourth treatment session and the sixth. Nonetheless, the author suggested that the apparent benefit observed by those who participated in the hypnosis with a structured experience condition could be attributed to the phenomenon of providing 'proof' to the patient that they are in a trance. It is also possible that the arm levitation was reflective of hypnotizability, and thus those

who were more hypnotizable would receive a superior benefit of the intervention.

Davis and Dawson (1980) noted that patients report greater weight loss when they anticipate visits to their therapist and that the use of an audiorecording with a hypnotic induction (for *self-hypnosis*) appears to have utility for continued weight loss. Cochrane and Friesen (1986) did not find self-hypnosis to have a greater impact than a hypnosis intervention without an audiorecording. In their study, 60 women were assigned to one of three conditions: (1) face-to-face sessions of hypnosis (two 3-h sessions per week for 4 weeks consisting both individual and group hypnosis) plus self-hypnosis (a 15-min audiorecording with hypnotic inductions to listen to at home for 6 months following the termination of the intervention); (2) hypnosis without an audiorecording; and (3) a wait-list control. The individual meetings for the hypnosis intervention consisted of *metaphors for ego-strengthening, decision making and motivation, ideomotor exploration in individual hypnosis*, and the group sessions focused on hypnosis with *maintenance suggestions*. Individuals who received a hypnosis intervention were found to have lost significantly more weight than individuals on the waiting list at both 1 and 6 months following treatment termination. Weight loss did not vary according to the inclusion or omission of self-hypnosis.

In summary, although studies on hypnosis as a treatment for obesity have not yielded consistent findings, most research has suggested that a hypnosis component, when used in combination with cognitive-behavioral therapy, exercise and a low-fat diet, might facilitate weight loss (Vanderlinden and Vandereycken, 1994; Schoenberger, 2000). The primary criticism in regards to the empirical support for the use of hypnosis for weight loss has been that studies have varied in their methodology, limiting the generalizability of their findings. In addition, many of them were relatively small and had various methodological limitations (Allison *et al.*, 2001). Hypnosis has been applied to a number of different treatment protocols, and the variation in the findings may be in part attributable to the wide variations in their treatment protocols and assessment procedures (Allison *et al.*, 2001). For instance, some of the interventions

used group treatment (e.g. Deyoub, 1979), some used individual treatment (e.g. Goldstein, 1981) and some incorporated both (e.g. Stradling *et al.*, 1998). Many of the studies also provided instructions for self-hypnosis, including listening to an audiotaped hypnosis induction outside of the study session (e.g. Wadden and Flaxman, 1981; Andersen, 1985; Johnson and Karkut, 1996; Stradling *et al.*, 1998), but only specifically examined the added benefit of this skill (Cochrane and Friesen, 1986).

23.3.3. Planning hypnosis treatment protocols

An integrated approach that incorporates multiple components, such as cognitive-behavioral strategies (e.g. goal setting and self-monitoring), nutritional counseling/dietary control and exercise, is the most effective for the treatment of obesity. Hypnosis can be individualized both to achieve weight loss and to help maintain weight reductions over time. In fact, the benefit of a hypnosis component may be most evident when evaluating continued weight loss and weight maintenance (e.g. Bolocofsky *et al.*, 1985; Kirsch *et al.*, 1995; Schoenberger, 2000). While specific suggestions and mental imagery may be tailored to individual preferences and needs, it is recommended that the following treatment components are included in a planning a hypnosis treatment protocol for obesity.

1. Baseline measurement (i.e. BMI, waist circumference, motivation, history of weight reduction attempts, examination of coping methods and social support resources, evaluation of mood or eating disorders, assessment of medical risk factors).
2. Goal setting (i.e. realistic goals).
3. Self-monitoring (e.g. daily food diary or journal).
4. Cognitive components (e.g. restructuring, brainstorming).
5. Dietary control (in collaboration with a nutritionist).
6. Exercise prescription (after clearance by a physician).
7. Establishing cognitive expectancies (e.g. positive expectancies for weight reduction).
8. Individualized hypnotic techniques (e.g. individualized suggestions to reduce food cravings, imagery of a comfortable place, imagining the future, feeling amplification, hypnotic dream, rehearsal in fantasy, ego enhancement, improvement of body image).
9. Stress reduction (e.g. progressive muscle relaxation, deep breathing).
10. Long-term follow-up (i.e. treatment contact extending over 6–12 months).

23.3.4. Case example

The following case illustrates the integration of hypnosis with behavioral interventions including self-monitoring, diet, exercise, altering cognitive expectations, problem solving and stress management. The patient, 'Linda' is a 55-year-old woman with a history of chronic obesity who was sent by her family physician for recommendations in regard to hypnotherapy for weight loss. She reported that she had never been very active in terms of exercise and that she felt that stress and her eating patterns were probably the most significant underlying issues for her. Her weight was 233 lbs and her BMI was 36, putting her in the Obesity II category. She related that her primary reasons for wanting to lose weight related to her health as she stated, 'I do not want to die from a heart attack or develop diabetes'. She also identified physical appearance and ability as motivating factors. Linda stated that she had tried several diets in the past and that her husband was supportive, but she found it difficult to make long-term lifestyle changes. She and her husband had been married for 35 years and have three children ranging in ages from 31 to 34. She stated that her husband was mildly overweight and tended to be more physically active than herself. During the initial consultation, a mental status examination was within normal limits and there was no evidence of significant anxiety or depression.

Linda stated that her goal was to reduce her weight by 40 lbs, as recommended by her physician. She had completed a visit to a dietician and had a 1200 calorie diet that she wanted to 'try to follow'. She expressed an understanding that she would need to reduce calories and begin an exercise program to achieve her goals. She identified drinking sodas and eating at high-fat

buffets as behaviors that she would need to modify. She gave examples of her eating habits as: Breakfast—fried eggs, bacon, biscuit and soda; Morning—two more sodas; Lunch—skip lunch; Afternoon—two more sodas; Dinner—Chinese food buffet. She identified additional obstacles to overcome including stress as she stated, ‘I eat when I am stressed. When I have a lot of work to do, or when the typical stresses of life are high I like the taste of food. It doesn’t matter what food, I just want something that is not stressful and food makes me feel good’. She also stated that she just ‘enjoyed eating’ and that she tended to eat when she felt bored, stating ‘when there is nothing to do, I tend to open up the cupboards and fridge finding something to eat’.

Hypnosis was discussed as an adjunctive treatment, and her expectations for herself and hypnosis were discussed. Linda expressed a positive interest in hypnosis and at the second session she brought a written summary of her expectations: ‘I am not entirely sure how hypnosis will work with my weight loss goals. I expect it will help me associate corrective thoughts, activities, feelings and behaviors to those corresponding thoughts and behaviors that are destructive to my health. Meaning, if I am stressed, through the hypnosis process I might be given the association/suggestion of exercising or some other behavior to get rid of stress instead of eating. I think I will still be able to choose whether or not I will follow the suggested behavior but I hope that through hypnosis I will be able to think about exercise or an alternative behavior before I think about eating. I would like hypnosis to help me control my appetite, control those negative emotion/behaviors that cause my poor eating choices (such as stress), and help with my motivation to exercise. I believe that hypnosis will not solve all my health problems, but I believe it can be a tool for me to reinforce good behavior and my goals’.

A behavioral treatment plan was developed with Linda that included the eventual elimination of sodas, a change in her eating habits to be consistent with a 1200 calorie diet, decreasing eating out at high-fat restaurants such as buffets, decreasing sweets and beginning an exercise program. Hypnosis was discussed as a method

to reinforce these positive behaviors, manage stress and dealing with feelings of hunger, foster positive expectancies and self-esteem, and facilitate insight. She was also asked to begin keeping a daily food diary to self-monitor her behavior and to investigate exercise alternatives. The SHSS:C (Weitzenhoffer and Hilgard, 1962) was administered and she achieved a score of 11, indicating high hypnotic ability.

Linda was seen on an approximately weekly/bi-weekly basis for 9 months. Sessions 4, 12 and 26 are summarized below.

23.3.4.1. Session 4: ‘I’m scared to death!’

By the fourth session, Linda had begun following her diet and was eating out less frequently. Eating a more healthy breakfast was discussed and scheduling only two sodas a day, one in the morning and one mid-afternoon, as she continues to withdraw from sodas. Also viable exercise plans were discussed including buying either a treadmill or a recumbent bicycle, or joining a gym for women. She was using on a daily basis a self-hypnosis taperecording that had been provided to her at the second session. However, she reported increased feelings of anxiety. She was asked about personal images associated with relaxation and she related a memory of going on vacation to a cabin in Colorado. These images were included in a hypnotic induction and she stated that she felt much calmer and more confident at the end of the session.

23.3.4.2. Session 12: ‘I’ve lost 15 pounds so far’

Linda brought her food diary to each session that was reviewed for compliance and any problem situations. She had reduced her sodas to one per day, usually in the evening. She was eating a more low-fat, high-fiber diet, and had decreased eating out at buffet restaurants. She stated that in the past she would have ordered a full meal whether she ‘wanted it or not’, but now she was able to ‘resist her impulses’ and was more likely to order a salad when eating out. She and a friend had visiting a gym several times and enrolled in an exercise program with a personal trainer. The patient did well with the hypnotic induction, reporting that she was able to become very relaxed. The session was taperecorded for her to repeat at home.

23.3.4.3. Session 26: 'Things seem to be falling into place'

Linda made good progress and at 9 months had achieved a 38 lb weight loss. She was still a member of a gym, but had bought a rowing machine that she used at home about three evenings per week. She expressed satisfaction in being able to wear new clothes and she stated that her anxiety levels had improved that she felt 'calmer overall'. She reported that she was 'taking more time for herself' and that her eating patterns were going well and that she seemed to 'choose better foods now without really even thinking about it'. She stated that she was having breakfast of fruit and cereal in the mornings; that she was eating a good lunch such as soup and salad; only one soda (diet) per day; and that she was not skipping lunch anymore. She eats a 'light dinner' and usually listens to a hypnosis tape before going to sleep or when feeling 'stressed out' at the end of a day. She was congratulated on her progress and she was encouraged to return for 'booster sessions' as needed. An example of the hypnotic suggestions used during hypnosis sessions with Linda is as follows.

23.3.4.4. Relaxation induction

You can begin the process of hypnosis today by focusing your attention and taking a deep breath of air ... as you exhale allow your eyelids to close, normally and naturally ... and allow your body to relax ... every muscle and every fiber of your body becoming as limp as a rag dollYour forehead relaxes ... your neck and shoulders relax. Letting all the tension go, so that for this time every worry and every concern can be set aside ... and just drift into the deepest levels of relaxation. Your back and shoulders relax ... back and stomach relax ... and perhaps your breathing has already become a little slower ... a little deeper as you go on further and more deeply relaxed ... so that even your legs and feet become completely limp and relaxed ... and as this occurs you may notice a drifting or floating sensation ... as you go deeper and deeper relaxed ... entering the deepest levels of hypnosis ... and as this occurs your mind can be at peace. Just at peace, so relaxed, calm and comfortable. Your mind becomes calm and more at ease. So that you can hear my voice with a part of your mind and with

another part of your mind finding that soon you are in Colorado, at a cabin there, near a lake where you feel happy and secure. So good to be alive. You enjoy every aspect of everything around you. To be aware of the beauty of the earth, the beauty and goodness of being alive. To be fully alive everyday, as you feel this calm relaxed mind, enjoying each day more and more ... and everyday remembering and experiencing this calm, clear mind and you will flow with everything around you ... able to face life with its problems in a relaxed way. Flowing with the problems In the same way you can flow with your hunger, feeling good about it. Flowing with your hunger as your body uses up all the stored up calories and each day you will take good care of yourself with your diet and with exercise ... just the right amount of each.

23.3.4.5. Self-monitoring

Each day you will be mindful of recording food that you eat ... and taking good care of yourself in this way Even now visualize and see in you mind holding the food diary and being in a restaurant and writing down in the diary what your are about to eat, the number of calories, and having a feeling of accomplishment and control as you do this.

23.3.4.6. Diet

And finding that you are making good choices about foods. You will find excessive, heavy, greasy, fat foods to be distasteful. You will enjoy taking care of yourself with a good breakfast of a high fiber cereal, fruit You will take good care of yourself throughout the day and eat a healthy lunch such as a good salad or a warm soup that you enjoy very much ... and in the evening you will find that an appropriate amount of food is satisfying and that you will be satisfied with one or two diet sodas a day ... something to enjoy and savor.

23.3.4.7. Exercise

You have already begun to exercise and it is good to be with friends and go to the gym. As you exercise you will find that you are less hungry and that low fat foods are more satisfying. You will find water to be satisfying to drink Proteins to be satisfying and you will look forward to exercise and the feeling of gentle soreness or fatigue in your muscles as they become stronger each time you exercise ... even now visualize yourself at the gym, see if you are on the treadmill, or the bicycle, or lifting

weights ... notice the good feelings and it motivates you even more.

23.3.4.8. Stress

As you practice hypnosis you will be less bothered by stress. At anytime you feel stressed you will be able to enter just as relaxed a feeling as you are now ... by practicing hypnosis you can relax ... and even now becoming more deeply relaxed. Let go of any tension that has remained. You can feel more and more peaceful and at ease ... as if you were looking out at a calm peaceful lake, and notice how calm the water is, without a ripple ... and feel that same calm, relaxed feeling inside. Calm and relaxed and at peace.'

23.3.4.9. Expectancies

Knowing that you have the ability to eat well and to exercise and that your weight will surely and steadily reduce to where you want it to be. Now see yourself in the future ... you have taken good care of yourself and reduced the weight. You are standing in front of a mirror ... notice how good you look ... how good your clothes look and fit ... this is happening and will continue to happen ... and it is a good thing to look forward to with confidence.

23.3.4.10. Self-esteem

And each day you will find that your confidence grows stronger. You deserve respect and kindness ... and each day you will be able to stand up for yourself, to express your thoughts and feelings, to be assertive in expressing what you want and need ... feeling so good about yourself and who you are as a person.

23.3.4.11. Self-hypnosis

Each time you practice self-hypnosis all of these suggestions will become more a part of you ... more automatic ... and eating well and exercise will become more a part of who you are ... just so natural and a necessary part of your day, everyday You will find that you are able to enter a very deeply relaxed state quickly and easily and that you are able to control your reactions to any stresses and remain calm and in control even when people and times cause stress.

23.3.4.12. Post-hypnotic suggestion

As you practice hypnosis you will find that you sleep well, any anxiety becomes less, you will be

mindful of keeping a food diary, eating well, and looking forward to exercise and the good feelings that come from these things ... able to see yourself in the future at your desired weight, calm and relaxed ... more assertive and taking good care of yourself everyday ... soon as you return to conscious alertness you will remain calm and relaxed with a good feeling of confidence in yourself and your abilities.

23.3.4.13. Alerting

Now beginning the process of returning to conscious alertness ... in your own time and your own pace ... in a way that feels just about right for you today

23.4. Conclusions

This chapter underscored that the quality of evidence supporting the use of hypnosis interventions for health-compromising behaviors has been varied. There needs to be rigorous clinical trials conducted examining the effects of multimodal interventions, where hypnosis is one of many components. Investigations should examine both hypnotizability using a well-constructed measure (e.g. SHSS:C; Weitzenhoffer and Hilgard, 1962) as well as assess for expectancies. Most importantly, however, is understanding not only whether or not an intervention with a hypnosis component has a superior benefit over other interventions, but also what mechanisms of actions are underlying the effectiveness of therapeutic techniques employed. That way, findings can be used to help guide 'real-world' application to address the complexity of these health-compromising behaviors.

Health-compromising behaviors represent a major area of focus for improving health and reducing disease. A variety of behavioral interventions exist; however, problem solving and behavioral recommendations alone do not work for the majority of patients, and long-term follow-up indicates that many persons relapse into old behavior patterns. Hypnosis can be effectively used to modify behaviors related to nicotine dependency and obesity. However, hypnosis interventions that are intensified in terms of frequency of contact, individualization and interpersonal relationships, and follow-up

or 'booster visits' are recommended for greater effectiveness. Also, when hypnosis is integrated within a multimodal treatment program, the synergistic effects of hypnosis interventions with other modalities may be of benefit. Additional clinical research into hypnosis is needed that includes adequate randomization, measurement of hypnotizability and expectancies, and objective outcomes to realize fully the potential benefit of hypnosis for health-compromising behaviors.

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CHAPTER 24

Treating children using hypnosis

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24.1. Introduction

The great storyteller entices listeners to focus their imagination; and to anticipate the story's trajectory. In doing so, the storyteller lures listeners into overhearing themselves. Hypnosis, like other therapeutic strategies, is always about momentum and change of perspective. It is through suggestion, not coercion, that we ask patients to think about, see, feel and experience their world in a different way. When it works well, it can be one of the summit experiences in a patient's (and therapist's) life—similar to the first glimpse over the edge of the Grand Canyon, looking out over the expanse of the ocean for the first time or witnessing the birth of a child. Hypnosis captivates the imagination, is welcoming and comforting, and leaves one with a sense of excitement and exhilaration. One need not go beyond the dramatic accounts of patients using hypnosis as the sole analgesic or anesthetic to appreciate how thrilling and life-affirming such interventions can be.

The use of hypnosis with children has a long and storied past. Documented work with hypnosis started with the very early clinicians, including Anton Mesmer in the 1700s. Since then, children have been included in the work of all the well known hypnotherapists including Charcot, Freud (Sigmund) and current therapists such as Olness and Kohen (1996), Thomson (2005) and

many others. In the following review, we want to highlight how hypnosis has been used to treat a variety of medical and psychological ailments in children, to alleviate symptoms and to aid in coping with pain and distress. While the child hypnosis literature is not as extensive as the adult literature (Chaves and Dworkin, 1997; Lynn *et al.*, 2000; Milling and Constantino, 2000), there is a rich history of creative applications of hypnosis embedded within sound therapeutic practices. The brief literature review (below) serves two purposes: (1) to illustrate the ways hypnosis has been applied with children; and (2) to create an applied framework for the clinical cases presented later in this chapter. For more complete reviews of the wider child hypnosis literature, please see Olness and Kohen (1996) and Milling and Costantino (2000).

24.2. Anxiety and pain associated with medical procedures

Because relaxation is a usual component of hypnosis, it is not surprising that many clinicians find hypnosis to be a useful tool in managing pediatric anxiety. Suggestions for mastery of feared situations can easily be incorporated into a hypnosis script. Unfortunately, the literature on the effectiveness of hypnosis as a component

of treatment for pediatric anxiety is quite limited. The literature consists largely of case studies that describe management of anxiety associated with either a medical condition or a medical/dental procedure.

Anbar (2003) describes a 12-year-old girl co-morbid for asthma and anxiety, who was taught self-hypnosis to help manage anxiety-induced upper airway symptoms that seemed largely unrelated to other signs of asthma exacerbation. In particular she complained of 'an upper airway wheeze' when she became emotional. Treatment took place over two sessions and involved creation of a motor cue (i.e. a suggestion that she could relax whenever she touched her finger to her thumb) and use of a patient-generated image of a tight airway opening up. Once her anxiety was managed with the use of hypnosis, her asthma became more manageable. In particular, she was able to stop regular use of systemic steroids.

Other case reports describe using hypnosis to treat anxiety along with pain or serious illness (Hilgard and LeBaron, 1982; LeBaron, 2003). Hilgard and LeBaron (1982, 1984) developed an imagination-focused hypnosis for problems associated with pediatric cancer. Their primary focus throughout a series of experiments is to relieve pain, emesis and anxiety in child oncology patients. In one particular study, Hilgard and LeBaron (1982) examined the effectiveness of hypnosis in the treatment of pain and anxiety in pediatric cancer patients ages 6–19. They found that while only the highly hypnotizable children reported pain relief with hypnosis, both the highly hypnotizable and less hypnotizable children reported a decrease in anxiety.

Zeltzer *et al.* (1984) compared the effectiveness of an imagination-focused hypnosis and a nonhypnotic distraction in relieving chemotherapy-related distress in 19 patients aged 6–17. The children were randomly assigned to either the hypnosis condition or the distraction condition. Children in the hypnosis condition were trained to use imagination-focused techniques during their chemotherapy treatment, while children in the distraction condition were taught to use jokes, humor or other distracters to reduce their distress. The results indicated that both hypnosis and distraction were equally effective in reducing

levels of distress for these children. In a follow-up study using imagination-focused hypnosis (Zeltzer *et al.*, 1991), 54 children between the ages of 5 and 17 were taught either hypnosis or distraction techniques for reducing nausea and vomiting. These children were compared with a control group that received standard of care treatment. The results indicated that hypnosis and distraction were equally effective for controlling both nausea and vomiting over the course of their treatment compared with the standard of care group.

Jacknow *et al.* (1994) compared hypnosis with standard medical treatment in children undergoing chemotherapy for cancer. Children newly diagnosed with cancer were assigned to either the hypnosis group or standard medical treatment, and were monitored for use of anti-nausea medications as well as anticipatory anxiety about treatment. The results indicated that children assigned to the hypnosis group used significantly less anti-emesis medications and had lower anticipatory anxiety compared with the standard medical treatment group.

Kuttner (1989) describes the use of hypnosis for management of pain and anxiety related to medical procedures. Reid (1988) discusses three cases in which hypnosis is used to manage dental anxiety, and Rustvold (1994) presents a case of dental phobia treated with hypnosis.

Finally, Young *et al.* (1991) describe the case of a boy with anxiety related to a learning disability that resulted in increased difficulty in written expression. Instruction in self-hypnosis along with behavioral techniques, such as self-monitoring, decreased anxiety and improved writing performance.

Friedrich (1991) provides a series of four case reports in which he describes using hypnotherapy to alleviate anxiety after traumatic experiences. In this review, he suggests that hypnosis can be used to address the cognitive, affective and behavioral manifestations of trauma. He suggests that it can be used to stabilize and remove symptoms of anxiety and lead to further uncovering of memories and emotions associated with the trauma. Finally, he suggests that hypnosis can be instrumental in helping the child integrate the memory and the experience into a higher level of ego development.

24.3. Somatoform disorders

Children with somatoform disorders, such as conversion disorder, pain disorder or somatization disorder, present a challenge to clinicians for two reasons: (1) insight into the psychological nature of these conditions is typically poor for both the child and family; and (2) the impairment can be severe enough to prevent a child from attending school or engaging in any other age-appropriate activities. Logically, hypnosis would seem to be a useful tool in treating these disorders. The therapist can help the child learn to alter the perception of the troubling physical symptoms, and can make suggestions for improved function. These techniques have been shown to be effective with adults (Moene and Roelfs, Chapter 26, this volume). Unfortunately, research in child area is limited to a few case reports (Caldwell and Stewart, 1981; Elkins and Carter, 1986; Shapiro and Rosenfeld, 1988; Bloom, 2001). Campo and Fritz (2001) list hypnosis as a useful component of an overall intervention approach for pediatric somatoform disorders, but do not include any discussion of types of suggestions or techniques that might prove useful.

24.4. General medical problems

Medical problems have long been the target of hypnotic interventions with children, enuresis being one of the most widely studied (e.g. Olness, 1975; Olness and Kohen, 1996). Edwards and van der Spuy (1985) provide the best empirical support to date for the use of hypnosis for the treatment of enuresis in children. They examined 24 primary and 24 secondary enuretic boys between the ages of 8 and 13. Children were assigned to one of four treatment conditions which included suggestions for dry nights with and without hypnotic induction or an induction-only group compared with a no-treatment group. Results indicated that the group receiving induction plus suggestion and suggestion-only experienced significantly fewer wet nights than the other two groups.

One study by Banerjee *et al.* (1993) compared the response of patients receiving hypnosis only

with that of patients receiving imipramine only. At 3 months into treatment there were no significant differences between the percentage of positive responders in each group. However, when the parents were surveyed 6 months after the end of treatment, more of the children in the hypnosis group remained dry compared with children receiving medication only. This was probably due to the large relapse rate of children in the medication-only group who resumed night-time urination after medication was stopped.

Olness *et al.* (1987) tested whether hypnosis was superior to propranolol or a placebo for the relief of pediatric headaches. Twenty-eight children were included in this randomized, double-blind placebo-controlled crossover comparison study. Results showed that self-hypnosis was superior to placebo and propranolol in reducing the number of headaches, but not in reducing the intensity of the headache pain.

Zeltzer *et al.* (2002) examined the feasibility of a combined intervention using both acupuncture and hypnosis for 33 sequentially referred girls with chronic pain. The 21 who agreed to participate ranged in age from 6 to 18 and were offered six weekly individualized acupuncture and hypnosis protocols. At post-treatment, 14 of the children experienced at least a 50 percent reduction in their pain ratings. There was a trend toward lower depression and anxiety scores over the 6-week treatment, but neither of these reached statistical significance.

24.5. Characterization of our approach

Our work with hypnosis is almost exclusively done within a medical setting in a university-based tertiary care children's hospital in the midwest. We work as part of a multidisciplinary pediatric psychiatry consultation-liaison team. We are called by primary medical services to each of the medical inpatient units of the hospital, the emergency room and all the outpatient clinics. We see nearly 500 new children each year with a staff consisting of two half-time psychologists, one full-time psychiatric nurse and a full-time child and adolescent psychiatrist.

At times we encounter a good deal of resistance from families when we are called. This is probably due to several reasons. First, the children and their families we treat come to the hospital for physical ailments often without expecting that there is an unmet emotional need requiring psychiatric intervention. For one reason or another, often as a complication of the medical course of their illness, or simply because of the difficulties of having a medical illness, they are demoralized and feel a sense of hopelessness. It is then, more than ever that we rely on a philosophical approach to treatment that can be well characterized by a quote taken from Olness and Kohen in their book on hypnotherapy with children:

In our therapeutic work, we recognize that we are not treating problems; we are treating and helping *children* who happen to have problems. No matter how severe the problems of our child patients, we address ourselves to their striving for experience, for mastery, for social interaction, for the inner world of imagination, and for wellness. Thus, we gain an ally in that part of the child that wants to experience life to the fullest, and this alliance forms the foundation of treatment (Olness and Kohen, 1996, p. 6).

Others in the field also conceptualize their work with children as helping the child help themselves. Thomson (2005) in her book of therapeutic stories for helping children heal demonstrates this well when she says, 'During therapeutic alliance, hypnotherapy can be a very powerful tool for a clinician who is invested in helping the child experience success, comfort and health. The hypnotherapeutic work enhances and strengthens the child's natural strivings toward exploration, social relationships, fantasy and creativity' (Thomson, 2005, p. 3). Hypnosis then, like other psychological interventions, is meant to be a tool used successfully by the patient, not a technique or procedure done to them. We are always collaborators, teachers, coaches and guides when helping a child or adult through the use of hypnosis. It is the striving toward wholeness in the face of bleak medical situations that guides our work with patients.

We teach individuals that there is an intricate connection between their mind and body. We often assume the general population has

a realistic understanding of the relationship between our mind and body, but unfortunately this is not always the case. In our work, we are faced with teaching children and their families the importance of this connection. We do it through stories, metaphors and illustrations. For example, we help families understand that stress can be 'like a pressure cooker on the body'. As a pressure cooker is placed on the stove, the heat is turned on and a valve is placed on the top of the lid, sealing the pot allowing pressure to build. However, when the pot encounters too much pressure, without proper release it can explode. One of three things needs to happen, either the pot is removed from the stove and therefore the pressure is gone, but the food is left uncooked. Not a great outcome, but better than exploding. Another option is to turn down the heat, which is analogous to changing external forces such as illness or school and work obligations. However, sometimes this is completely out of the families' control. Finally, one could adjust the valve on the top of the pot. By teaching children and their families coping strategies, such as hypnosis, we see ourselves as preventing more emotional explosions. In situations where the family is reluctant to engage with us, this gives us some opportunity to help the family relieve some of their stress.

We strive to deliver hypnosis services that are tailored to the individual and their family, recognizing that an important prerequisite to this is building and maintaining rapport with the child and his/her family. Suggesting an alternative set of coping strategies and perhaps seeing or interpreting their world in a different way could be the key to allowing a child to develop a sense of mastery and competence in the face of rather dire medical situations. The following case illustrations are meant to demonstrate our particular approach and not only engage the reader in techniques but also provide some understanding of how we make clinical decisions while doing hypnosis with patients.

24.6. Case 1

24.6.1. Background

Nicholas was an 11-year-old white male hospitalized for abdominal pain, nausea and vomiting.

Two weeks prior to this current admission he was diagnosed with gastroenteritis, usually a viral infection of the digestive system causing inflammation of the intestinal tissue resulting in abdominal cramps, diarrhea and sometimes vomiting. Upon discharge from that hospitalization he continued to have significant levels of abdominal pain, nausea, vomiting, loose stools, poor appetite and sleep disturbance secondary to his pain, nausea and vomiting. An EGD (esophagogastroduodenoscopy) and colonoscopy during his admission were consistent with a diagnosis of Crohn's disease. The GI service, who asked us to see Nick on hospital day 6, thought his pain was 'out of proportion' to his current medical condition and suspected his report of pain had a psychiatric component to it.

When we saw him he continued to complain of stomach pain despite using Tylenol with codeine, vicodin and morphine. His pain and discomfort were significantly interfering with his ability to carry out a normal daily routine. Indeed, when we saw him in his hospital room he was sitting in a wheelchair and refused to walk because he was feeling dizzy. He initially denied any symptoms of anxiety, depression or bipolar disorder, but as the interview and our interaction with him unfolded it was increasingly clear he had significant anxiety. His worry centered mostly on his father's drinking behavior and the fear that his father would be hurt again after drinking. His fear was not unfounded; Nick witnessed a fall his father had while drunk one evening resulting in a hospitalization after stumbling down a flight of stairs and breaking his arm. Nick also worried about his peer's perception of his illness and hospital stay, especially after experiencing a great deal of teasing and pressure at school by one particular peer who routinely made fun of him. Nick was very self-conscious and often brooded about interactions such as these at school. When he ruminated, he would become withdrawn and quiet, frequently complaining of headaches and stomach aches which led to some school refusals.

Nick was quite healthy up to this time with only a few medical problems prior to his current episodes. These included a past history of RSV (respiratory syncytial virus), which is a common cause of pneumonia and bronchiolitis in infants and children. He also experienced one febrile

seizure as a young child. He and his parents reported no surgeries, loss of consciousness secondary to head injuries nor need for advanced testing such as EEGs, MRIs or PET scans. His only medication allergy was to Sulfa drugs. His immunizations were up to date and at the time of our first evaluation he was taking polyethylene glycol (Miralax), budesonide, lansoprazole (Prevacid), vicodin, mesalamine (Asacol) and methylphenidate (Concerta).

Nick was first diagnosed with attention deficit hyperactivity disorder (ADHD) and oppositional defiant disorder (ODD) when he was 3 years old, and started taking dextroamphetamine (Dexedrine) and clonidine without relief from the symptoms. Later his psychiatrist changed his medication to Concerta 54 mg in the morning and 18 mg after school. The medication relieved most of his hyperactivity, but he was also enrolled in outpatient behavior therapy to address his defiance and bouts of physical aggression at home and school. Several years prior to his current medical hospitalization, Nick was psychiatrically hospitalized for hostility, physical aggression and dangerous behavior toward himself and others. He was stabilized there and discharged back to his psychiatrist for medication management, but no outpatient psychotherapy was part of his follow-up plan however. When we first met with him, he was still having some difficulties co-operating with his mother regarding his homework, chores around the house and other responsibilities. He had also missed a great deal of school secondary to school refusal behavior and the recent bout of stomach discomfort.

Nick's social life was in turmoil after his parents divorced 5 years prior to his current hospitalization. Despite the fact that his father lived close by, Nick saw him only on an irregular basis. When Nick saw his father it was often on weekends when he was drinking heavily with one of his new girlfriends. It bothered Nick that his father had a series of girlfriends who came in and out of Nick's life since the divorce. He quickly learned after the divorce that going to his father's house was highly anxiety-provoking for him and something that he frequently avoided. Further complicating matters was a poor relationship that his father and mother had after their divorce. When they did interact it

frequently ended in arguments in the driveway or in the front yard. Finances for Nick's family had also been the source of stress for Nick as his mother worked as a waitress at a local restaurant. Overall, Nick was in a safe environment that met his basic needs, but there were many instances of social instability and interpersonal conflict that appeared to our team to be impacting his ability to manage and cope with his newly diagnosed Crohn's disease.

24.6.2. Formulation

This is a child whose lack of intra- and interpersonal strength coupled with a newly diagnosed medical illness has left him physically weak. Neither his early nor his current relationships have prepared him for the level of stressors he experienced at home, school or the hospital. He longed for satisfying social relationships with peers, but had difficulty attaining them. He frequently fought with his family and peers, and was psychiatrically hospitalized for aggression in the past. Based on our review of his medical records and conversations with him and his family, we determined that he had several acute needs. The first was corrective mastery experiences in the context of a relationship with trusting adults. This was important in part to undo problematic relationships he had in the past. His lack of trust stood in the way of making progress in psychotherapy. The second was relief from his pain. Our interpretation was that there was pain from the Crohn's and the pain caused by his stressors in his life. As recent reviews of the treatment of other abdominal pain and disorders show, examining both sources of pain is highly relevant (Pallson, 2006). Third, he needed exercise and a daily routine to get him back to a normal schedule for an 11-year-old boy. Fourth, if he was to return to school, he had to overcome some of his fears regarding relationships there. Long-term needs that we encountered for him included repairs in his relationship with his parents. In addition, he needed relief from his stressors at school and he needed skills to relieve some of his fears about his father.

24.6.3. Treatment plan

We made a decision very early on to use hypnosis with Nick for several reasons. First, it is our

experience that hypnosis can accelerate the rapport building that happens in the context of therapy, and we needed this because we were fairly certain that the medical team was going to be pushing to release him, especially if there were not medical reasons for keeping him in the hospital. Additionally, we knew that relationships in Nick's life up to this time had been problematic, inconsistent and sometimes destructive, and we openly wondered how he would do forming a relationship with us. Because of this history and his initial reluctance to engage with us, we wanted him to have a pleasant and rewarding experience. Third, we knew that the power of therapy, and hypnosis specifically, allows people to perceive their situation and world in a very different manner. This shift in perspective can be life altering and ultimately healing. Hypnosis is often about discovering aspects of one's life that were forgotten, ignored, overlooked or never considered. It is often these interpretations or perspectives that can bring about the healing process. It is truly the process of considering reality in a very different way.

24.6.4. Treatment

Our first hypnotic session with Nick was at the end of the initial evaluation. Since I knew that time was of the essence, I set to work on building rapport, some ego-strengthening and relaxation techniques. We took this approach with him because giving him the tool of self-hypnosis could offer him two very important things. First, hypnosis could give him the opportunity to master a new skill which might help neutralize his self-doubts. Second, learning self-hypnosis under the guidance of a calm, benevolent adult might itself be emotionally restorative.

Taking his developmental level into account, we knew that at age 11 he was ending the Concrete Operational stage of development and was beginning the Formal Operational stage. Attainment of concrete operations is characterized by many cognitive changes, but two here that we want to focus our attention on include increased ability with perspective taking while using multiple cues or aspects of a situation to make a judgment. The second is a dramatic decrease in egocentrism. The two faculties are related in that each is a necessary element for the emergence of abstract

thought about problem solving. They both aid an individual's ability to reframe a problem from a different point of view. The drop in egocentrism allows an individual to suspend or at least temporarily suspend their focus on their immediate state to consider other possibilities.

During the first several sessions of hypnosis, I spent a significant amount of time building rapport since Nick was initially defensive, soft-spoken and hesitant to engage in conversations. It was during this rapport-building time that I learned he liked auto racing. Since we were in Indianapolis, I wanted to know if he was an Indy Racing League fan or a NASCAR fan. He revealed that he liked Jeff Gordon and had been rooting for him during the current racing season. Once I knew of his interest, I immediately began thinking of metaphors to incorporate into the hypnosis session. Since I was not knowledgeable regarding racing, we spent more time discussing elements of racing and what he might encounter if he went to the track. This not only helped me with my knowledge deficit, but also gave him the opportunity to experience someone showing interest in his interests. It was time well spent.

In the second hypnotic session, we embellished the metaphor of racing and the possibilities by using some visualization and imagery of a race track. This time when I began the conversation, I wanted to help him visualize concrete objects, sights and sounds that would be found at the race track. I tried to put myself in the scene and visualize for myself what I would see, hear, smell and touch if I were walking up to a racing car. This spurred several images for me including the buildings, people, cars and objects that were leading up to the track. While he was sitting in his hospital bed with his father chiming into the conversation, I inquired about the drivers and the pit crew.

Therapist: You have to talk with your pit crew. So what else? Your helmet and harness?

Nick: Yes, they have this thing that they can talk with me, like a microphone. They also have a tube for a water thing that comes around (Nick motions from the back of his head to his mouth).

Therapist: They probably have to wear a special jacket ...

Nick: Yeah, a fire suit (smiles and nods)

Therapist: Anything else that they wear other than the fire-resistant suit, gloves, boots. So they have a fire-resistant suit, helmet, harness, walkie-talkie, so they can talk with their pit crew ...

Nick: and the water thing (again motions from the back of his head to the front of his mouth).

I am repeating the things the Nick said so that I can get consensus and buy-in from him which is one of the things we look for in order to proceed into hypnosis. This indication tells me that he is fully engaged and more likely to enter hypnosis. Some of the words begin to form a rhythm, for example helmet and harness. I am intrigued about the relationship that happens between the driver and the pit crew as a potential for an analogous relationship with Nick and me. It could also provide a metaphor for the relationship between him and an observing ego.

Therapist: Can the pit crew ever tell the driver how to make adjustments in the car? For example could they call Jeff Gordon and tell him that his tire is a little low? Or could Jeff call them and inform them of something happening with the car? Can they give him some advice about how to drive the car if his tires were pulling to the left?

Nick: Yes (nodding his head)

Therapist: Some adjustments that he could make like slow down or don't take the turn so hard.

Nick: ... and they have spotters too. Way up in the air so that they can see.

Therapist: Does each driver have their own spotter?

These exchanges about spotters are a good metaphor for the observing ego. They are not necessarily made explicit to Nick, but simply a way for the therapist to conceptualize Nick's intrapsychic process.

Nick: Yes

Therapist: We might be able to think about that when you are driving your own car (referring to the use of the racing car as the object of the hypnotic episode). And they can figure out a way to help you when you are driving your own car. Maybe help you out when you aren't feeling so comfortable.

Nick: (nodding in agreement)

Therapist: Like if Jeff Gordon's harness were tugging at his side, he could tell his pit-crew about it and make an adjustment. (I want him to see the discomfort he has in his side as a tolerable sensation, rather than something that needs to be eliminated immediately. Therefore, I want to create an analogous situation that Jeff Gordon may have to face and how he would deal with the sensation.) There might be something with racing that we could play around with that might help the way that the body feels.

Nick: Yeah (nodding in agreement).

Therapist: When we did the hypnosis yesterday we tried a couple of different techniques. The first was when I put my finger on the top of your head and you had to roll your eyes back into your head (referring to eye-roll induction). The second one was you staring up at a spot on the ceiling. Which one would you like to do today? (Notice that in this situation I ask him which form of compliance he would like to engage in during the session today, not whether he would like to do hypnosis again. Again, the hypnosis has to be set up effectively and placed within a therapeutic context. He is a good candidate for hypnosis because rapport has been established and there is a good working metaphor and word picture—racing cars).

Nick: The one where you put your hand on my head (raising his hand and placing it on his head) because my eyes were watering when I stared up at the ceiling yesterday.

Therapist: Let's go ahead and do the eye-roll again. Remember yesterday, I had you roll your eyes up, up and up and then close your eyes and feel relaxed. I'll go ahead and walk you through it until you get relaxed. (Even the use of the words, 'walk you through it' connects with his kinetic orientation.) Ok (placing my first two fingers on his forehead) just look up, up and way up. You may notice it hurts just a little bit, but that's ok. Take a deep breath and let it out. Take another deep breath and as you let it out let the eyes close gently. Relaxed and comfortable, relaxed. You may notice the relaxation going into the eyelids and the face, down into the cheeks, the chin. You focus your attention to the air going in and out of the nose. You can focus your attention on the sound of my voice and breathing. You can take nice easy breaths, listening to the sound of my voice. There may be some sounds in the hallway but

you can let the mind ignore them. Now as you feel more and more relaxed, you may notice you feel more and more comfortable. As you feel more comfortable, your mind begins to think of other things and perhaps begins to drift a bit and focuses on other things. You may begin to want to think about a place you feel very comfortable. This place may be a race track.

I intentionally leave this open ended as a true suggestion, not a stipulation for continuing. It is entirely possible that he begins to think of somewhere other than a race track and I want to hold this possibility open for him.

Reflecting for a moment on the induction procedure for Nick, a few things are important to ponder as a clinician. First, why choose one induction technique over another? It was not entirely clear why Nick enjoyed the eye-roll induction more than the eye fixation, but some research indicates that younger children do not do well on the eye-closure items on the Stanford Hypnotic Clinical Scale for Children (Morgan and Hilgard, 1979). Nick has demonstrated some shyness and behavioral inhibition, and so the more active work of the hypnotherapist in the eye-roll technique may suit him better than a more passive trance induction technique. This simple clinical decision highlights the need to have the ability to offer Nick a variety of hypnotic inductions in order to succeed. It also highlights that the nature of the therapeutic relationship is more important than the words used to induce the trance. This is illustrated nicely in the following quote about induction technique '... it is the *meaning* of the interpersonal interaction implied in an induction and not the simple stimulus value of certain words that is of most significance in determining the kind and extent of the hypnotic response (Barabasz and Barabasz, 2006, p. 108).

It was believed by members of our team that Nick did have a good relationship that helped with his induction into hypnosis. Several elements that pointed to that included his rather agreeable disposition, his frequent nods in agreement with what was asked of him during the preparation interview and the pleasant smile on his face. These all could have been feigned, but it did not appear that way during the interaction with Nick.

Now that he is induced into trance, the task of deepening is begun. The task of deepening in this situation begins the phase of hypnosis where a good deal of creativity and tailoring of the hypnotic experience begins. This is also where the hypnotherapist can begin entering their own trance-like state and begin to work in synchrony with the patient.

Therapist: Perhaps you begin to walk on the tarmac in pit row toward the car. Each step you take you begin feeling more and more relaxed. One step, more and more relaxed. Two steps. Three steps, more and more relaxed now. Four steps, five steps, six steps, seven steps, eight, nine and ten steps. You are able to see the pit crew, the car and all the colors that are there. Feeling deeply relaxed you can be there and simply enjoy the scene for a few moments. Perhaps there are many people that are there or very few people. The car is there and so is Jeff Gordon.

Nick: (His respiration rate has slowed and he is taking shallow breaths and has begun to have some rapid eye movements like those that occur when someone is dreaming. His mouth is slightly open in order to exhale. He appears very comfortable as he lies in his hospital bed.)

Therapist: Perhaps you can see the car, the tires and other equipment that is there. You can hear people talking and moving about getting things ready for the race. Perhaps there are other cars racing around the track for some pre-race warm-up laps or practice laps. There is an excitement in the air. You begin to feel deeply relaxed when you consider the race that you will be in later. As you prepare for the race you begin to put the fire suit on. (Nick develops a smile on his face in response to this suggestion.) You can feel the pants, shirt, coat, boots and gloves as you put them on. They fit rather snugly, but the pressure is comfortable and leaves you with a sense of strength, power and safety. You also put on the helmet with the walkie-talkie inside. You also notice how snugly the helmet fits which tells you how well it will protect you when you are racing in the car. As you strap it on with a big black strap, you feel the pressure of the strap on your chin. You then take the water hose that is around your neck and you can feel it in the mouth and know that it will bring refreshing water to you when you need it. Perhaps you take a quick drink of

water to see what it feels like. When you notice the sensation it will be another signal to you to feel even more relaxed. You may want to also try out the walkie-talkie in your helmet to be sure that it is working properly.

Now you may want to climb into the car. Once you've climbed in and you feel comfortable, just give me a signal that you have reached that point by lifting your finger.

Nick: (within several seconds Nick lifts his finger.)

Therapist: That's right, now we know that you are relaxed and ready to climb into the car.

More time is spent here embellishing the metaphor and picture of the scene. As the therapist I want to give him enough of a concrete, anchoring picture of what he might encounter, using as many kinesthetic verbs and adjectives as I can, but leave him to fill in many of the other details.

Now he enters the working through phase. This is where the real transformation and an alternative explanation for reality can take place.

Therapist: Now as you climb into the car, you immediately notice where the harness is and begin to strap on the harness. Jeff Gordon is next to you in the driver's seat. You climb into the passenger seat.

Nick: (Smiles as he hears about climbing into the car with Jeff Gordon there.)

Therapist: As he's buckling up his harness you begin to buckle up your harness. You can feel it going around your shoulders and over your waist. You feel the pressure of the seat and hear the sound of the car as the engine is running. You look out the door and see all of the people in the stands. You look down at the harness and see it coming over the shoulder and over the lap. You feel comfortable and relaxed knowing that Jeff is going to be driving the car. People will be watching you in the stands. You know that if anything happens during the race people like the spotters and the pit crew will be there to work on the issues.

As you move out onto the racetrack you can hear the engine roar and the acceleration of the car around the track. You pick up speed and hear the engine making more sound, but you know that it is simply the engine accelerating. You begin to feel

a bit of pressure pushing you back into the seat, but you know this is only the result of you going faster and faster around the track.

As Jeff takes the first turn you can feel the car banking on the turn and you can feel a bit of the harness pulling. You feel safe while you are in the car with Jeff driving. As he enters the second turn you once again have a sensation of pressure on the right side where the harness is keeping you safely fixed in the car while it careens around the track.

This is the crucial portion of the session where I am making a new suggestion—namely that his previous sensation of pain in his right side is no longer pain, but a pleasant sensation that he would gladly experience if he could have it because of a safety belt harness in Jeff Gordon's car. The sensation is still there and I haven't yet made any suggestions to diminish the feeling, just to change its interpretation. Nick remains calm and lying in bed with his eyes closed. He appears to have a pleasant look on his face, as if he is enjoying the scene being played out in his mind.

Therapist: The more you move around the track the more excited you may become. When you become more excited you may notice that the mind begins to relax and not pay as much attention to sensations from the body. Almost as if the faster the car goes, the less the mind pays attention to the sensations. The more the mind forgets, the more the body relaxes and has a thrill of going around the track in the car with Jeff Gordon. As he makes the car move into the third turn you hear the car shift gears and slow down slightly. But then once out of the turn, Jeff shifts back down and he accelerates again. You may find yourself shouting and yelling with excitement and a feeling of exhilaration at the fast movement of the car.

As he pulls into the straight away out of the fourth turn you feel the final tug at the right side, but it is smaller than ever now. As Jeff drives away from the turn it is almost as if the body begins to pull away from the sensations, and the feelings can't keep up with the car. You and Jeff are pulling away and the feelings simply are no match for the driving car. As you move into the first turn again, you notice the slight tug at the right hip from the racing harness. It is barely even noticeable this time. This is happening because you are feeling so excited while you and

Jeff rapidly race around the track that the discomfort now is almost just a distant memory. Now as you move to the straight away between the second and third turn Jeff turns to you and asks what you think he should do with the car. Should I shift gears? Should I let up on the gas? He really wants to know how you would handle the turn. Perhaps you look at him and quickly think of just the right thing to do in that moment. Jeff then guides the car around the corner safely and quickly. He remarks how you just taught him a new maneuver and that he will definitely use it in his next race. Perhaps there is a sense of joy and excitement as Jeff just took your advice in steering the car. He then asks your advice while checking the gauges on the dash. He looks at the tire pressure, oil pressure, gas gauge and asks you if you think there is enough gas to move another lap around the track. Confidently you turn to him and say that he can make it. You may notice a smile moving across your face as he takes your advice and you take another lap. Once again racing around the track you come into the fourth turn with Jeff moving up to the wall, feeling a sense of exhilaration and speed as you race past the pit crew. They are all on their feet shouting and celebrating the great run you are having with Jeff. Perhaps you could even imagine a large crowd gathered in the stands on race day cheering and shouting.

You and Jeff look in the rearview mirror and notice that there are some small cars in the distance trying to catch up to your position. Jeff begins to accelerate faster and faster to keep ahead of the approaching cars. When you take a look in the mirror you notice a very distant last car with the same image of the discomfort that you had left behind. It reminds you of all the work you have done to move away from it. It has not bothered you throughout the practice and it certainly does not look as though it will make a run at you now. With Jeff's maneuvering and your guidance it is clear you will finish ahead of all the other cars on the track. Neither you nor Jeff was anticipating a race today, and none was originally scheduled on the track, but racers are competitive and a race just began to happen. Jeff turns to you and says, 'That's why we practice, so that whenever a race does happen we'll be ready for action'.

Just then, you hear over the headset that the pit crew wants you to come in to change the cars tires.

When the car is in the pits, the crew jacks it up, changes the tires and gets it ready for the rest of the race. Jeff turns to you and asks if you would like to finish the race. Taking this opportunity is both a great risk and a great thrill. As you pull out of the pits, you look back and notice you are slightly behind the lead car. You accelerate and take off to catch up with him. You find yourself using the skills Jeff has taught you and trying new maneuvers while on the track. Full of concentration, yet composed and relaxed, you begin passing one car after another and regaining the lead. On the final lap of the race, Jeff turns to you and says, 'I think you're going to do it. I think the victory is within your grasp'. The feeling of the tires on the pavement, the smell of the gasoline burning, the larger crowd cheering as you cross over the finish line to receive the checkered flag is like no other feeling you've had before. Victory lane is sweet and the applause you hear is exciting. When the buckle from the harness is unsnapped by the pit crew, you notice that it has been there all along, but without any discomfort. You feel excited that you have been able to race all day long with the sensation there.

Elements of the metaphor that provided the engine for change in this session include distancing from the pain by racing around the track. By actively driving the car, Nick took control over the distance and competently defeated the pain in a head-to-head competition. Facing his pain is highly consistent with a classic cognitive-behavioral strategy of exposure therapy used in many treatments for children (Kendall, 1990; March and Mulle, 1998).

Reinterpretation of his symptoms by helping him to think of the pain in his right side as tugging of the seatbelt harness in the car is another tool utilized here. This was achieved in part by having him experience sensations that were antithetical to pain—exhilaration of the race, being with Jeff Gordon and relaxation. Additionally, the sensation is not removed completely by another person, which could render him powerless. Instead he took control of his pain.

There could be a temptation to interpret the metaphor completely for Nick. By doing so, however, we could risk an escalation of resistance (Barabasz and Barabasz, 2006; Palsson, 2006) By abstaining from interpretation we

maximized the chance that he would sustain his attention both during the hypnotic session and for practice afterwards. Based on the smile on his face, it was clear he liked the metaphor.

We wanted to ensure that Nick continued to practice these techniques and so we gave him several post-hypnotic suggestions. Generally, we give reminders to practice and help individuals experience themselves as competent and powerful to affect change.

Therapist: As you stand now with Jeff in the victor's circle the attendant gives Jeff the trophy, who gives it to you and says, 'Great race'. You feel excited and you begin to bask in the excitement of the moment while you think of all the things you did to make it to victory lane.

The interviewers and individuals from the newspapers start to ask Jeff what he did to win the race. He turns to you and says, 'Why don't you answer their questions because it was your expertise that got us to victory lane'. As you hold up the trophy you hear a congratulatory message over the walkie-talkie telling you how great of a job you did on the race. You tell them that you could not have done the race without their help and assistance.

As the celebration comes to a close, you begin to settle down a bit and begin to think about all that you have done during the race and the lessons learned during the experience. Perhaps you would like to take a moment now to reflect and think about what happened. Take some time to notice how excited you may feel and what it is like to have victory on the track.

It is during this time that I want him actively to reflect on the experience and make note of what it feels like to experience physical relaxation. I want him to remember it so that the next time he feels uncomfortable, anxious or tense, he can recall this corrective experience and begin to take action to bring it about. Therefore, I give him the following post-hypnotic suggestion.

Therapist: Now that you know what it is like to feel relaxed and calm, take a moment to remember what the body feels like right now. Take some time to notice what the trophy in your hand feels like and what it means to have won it. You know now that if you would like to feel this way again, you can let the

mind begin to think about the trophy, picture it in your mind and, by taking a slow deep breath, be able to bring both the picture and the feeling right back. You can use this whenever and wherever you wish. Go ahead and take a nice easy breath, picture the trophy and have that relaxed feeling. When you have been able to visualize the trophy and the scene, just let me know by raising your finger again.

Nick: (He raised his right index finger signaling completion of the visualization.)

Therapist: That's right, now I know that you are feeling comfortable and are able to remember what brings back a sense of relaxation. Just take a moment to feel what this is like. (I give Nick about 20–30 s of quiet time to notice the sensation.)

Through the use of post-hypnotic suggestions to imagine relief when he thought of the trophy, we give him the power once again to 'be the victor' over his pain and anxiety. Finally, this new behavior was reinforced by our team after we learned from his nurses he took the initiative to practice on his own.

Therapist: In a moment, but not before the mind is ready, you will begin to come out of trance. As I count backwards from 5 to 1 you will begin to become more alert and aware of your surroundings. 5–4–3, feeling a bit more alert and able to hear the sounds around you. 2, 1 and, whenever the mind is ready, you can open your eyes recognizing that you are back here in your hospital room.

Nick: (Slowly opens his eyes and a smile breaks on his face.)

Therapist: So how do you feel?

Nick: Good.

Therapist: Tell me what you experienced. What do you remember?

Nick: I remember going around the track and the crowd cheering for me. I also liked being with Jeff Gordon.

Therapist: Did you feel or experience the harness on you?

Nick: Yes I could feel it tugging at my side.

Therapist: Did it feel uncomfortable?

Nick: Not really, it was there, but didn't hurt. I really liked helping Jeff go around the race track though.

Therapist: I wonder if there are ways that you could use this picture and practice going to the race track using your tape. Perhaps you could use it before going to bed each night to help you fall asleep.

Nick: I think I could do that.

Therapist: Has the physical therapist come today to help you get up and walk?

Nick: They haven't come so far. But I think they are coming later.

Therapist: I'll bet that you can find a way to get up and move around so that the wheelchair isn't necessary anymore. Physical therapists are good at helping people get up and move around after they haven't been feeling so good.

Even after the trance is completed, there is a continuation of the suggestions to the patient. The comment by the therapist to suggest that the patient can find a way to walk is intentional and not a mistake. Language during and after hypnosis is important, and so these words are carefully crafted to offer an opportunity for success and mastery. That way, if he does walk, he was the one that found the way to do it. Physical therapists are good at encouragement and have many techniques of their own to motivate patients during times of difficulty. Embedding his total recovery within the context of a multidisciplinary team is almost of utmost importance for success.

Subsequent meetings with Nick on an inpatient basis prior to his discharge were meant to reinforce practicing his hypnosis and reinforcement of attempts at successes. He continued with a fairly significant physical therapy regimen of 2–3 h per day in order to reinforce his attempts at mobility and resumption of a normal schedule prior to discharge. He began walking the day we saw him, though not in our presence. We elected not to place him on any psychotropic medication as we saw his problems as largely a manifestation of a somatoform disorder. Medically, he was going to be followed by the Gastroenterologists at the children's hospital for his Crohn's disease. He continued with significant stressors of his parent's contention and worry about anticipated teasing at school. His global assessment of functioning at discharge was estimated to be 45–50. He remained on

his Asacol, Budesonide, Miralax, Imipramine, Oxycodone, Naproxen and Tylenol at discharge.

24.6.5. Outcome

After Nick was discharged from the hospital he was seen for approximately five more sessions of individual and family therapy in our outpatient clinic. Our first several sessions focused on getting him back into a regular routine including resumption of school attendance. To do this, we made several phone calls to his teacher and principal to ensure that his academic work would not be adversely affected by his absence from school. In particular, Nick was very concerned about standardized tests that he had missed while he was in the hospital. He received assurances from his teacher and principal about ways to make up the exams he missed. This brought significant relief to Nick. It was also during these subsequent sessions that we discovered that Nick had a significant amount of anxiety which he had not readily admitted to in the hospital.

The second and third sessions included cognitive-behavioral work to provide Nick with coping strategies to deal with his anxiety. The treatment included education about anxiety, how to recognize it and a beginning problem-solving strategy in order to resolve it. This included new cognitive techniques to challenge his distorted thinking regarding his father and peers, as well as reviewing the hypnosis tape from the hospital.

The final several sessions with Nick included some behavioral modification work to address an increase in rude and unco-operative behavior at home. This was a long-standing problem as Nick and his mother had been arguing and fighting for many years prior to our treatment. The majority of the work in this phase of therapy included basic parent training skills for his mother, teaching her limit-setting skills and ways to maintain her authority. We established a regular schedule, a responsibility chart and some communication practices to ensure his mother was kept abreast of his academic responsibilities.

When therapy ended, Nick was pain free, was attending full days of school and felt more confident and self-assured in his relationship with

his family and friends. Additionally, he had been weaned off from his pain medications.

Like Palsson (2006), the entire sequence in the work with Nick started with an induction technique, moved to a trance-deepening counting progression to induce relaxation, then a 'therapeutic scene' experienced by the subject's five senses. Suggestions for Nick were highly specialized to maximize the possibility that he would be engulfed in it. Our hope was that this absorption would help him be more open to the therapeutic suggestions made for pain relief. The final stage of the hypnotic experience was the trance termination.

24.7. Case 2

Brian was a 16-year-old boy with a long history of severe aplastic anemia. Over the years, he had received frequent transfusions related to this condition, and was now hospitalized for a matched, unrelated donor stem cell transplant which, if successful, would provide long-term correction of the condition. Unfortunately, success of a matched, but unrelated stem cell transplant is only approximately 50 percent. Brian, his family and doctors had been discussing the possibility of this procedure for about 5 months, and Brian was quite aware of the risks and discomfort involved. He was referred to our pediatric psychiatry consultation service to evaluate his adjustment to his upcoming stem cell transplant.

During our initial interview, Brian did report being 'a little worried' and scared about his upcoming transplant. Brian said that his worries increased markedly during the weeks prior to admission, but that he was trying to hide this from his family. He reported worrying that the transplant would fail, resulting in prolonged disability or death. He also worried about the toll that the procedure would take on his body. He also worried about how he would cope with being separated from much of his family, friends and regular activities for the coming months. The worries had been keeping him awake at night, and he had been self-medicating with an over-the-counter sleep aid. His appetite had also decreased markedly during the previous few weeks.

Brian's parents described him as a 'good kid' with no history of behavior problems. Brian was

a junior in high school and had always been a solid A/B student. He had played baseball for many years, and was currently a star pitcher on his school's team.

24.7.1. Formulation

Brian presented with a number of issues that our team believed could be addressed through use of hypnosis. These included: Brian's anxiety related to his medical condition and treatment, including the stress of being restricted to one room in the hospital for approximately 1 month with very significant restrictions regarding visitors, and physical discomfort associated with treatment including headaches, nausea and vomiting.

24.7.2. Treatment plan

Imagery of a special place was chosen as an induction technique for Brian. This technique was chosen in part because other inductions might produce an obviously unwanted aversive experience. For example, eye fixation might have drawn focus to his headaches, which involved some visual disturbance. Arm raising or lowering, or any other technique involving movement of hands or arms, might have drawn unwanted attention to various wires and lines attached to his limbs, as well as to the increasing fatigue and weakness associated with his treatment. Another part of the rationale for choosing special place imagery as an induction was that given Brian's restriction to his room, it was quite appealing to him to imagine being outside of the room; it allowed him the opportunity to take a break temporarily from the hospital.

24.7.3. Treatment

Brian chose to imagine himself on the ball field. Details of the appearance of the field were described, along with sounds, physical sensations and some carefully selected smells to avoid triggering increased nausea. An example of the type of induction used with Brian follows:

Therapist: To start off, make sure you're as comfortable as possible. Get your pillows arranged just how you want them, and tilt the bed up or down as much as you'd like. (Brian was encouraged to do anything needed to maximize his physical comfort,

including adding or taking away blankets to keep from feeling too hot or cold. When he stated that he felt comfortable, we continued.) As you close your eyes and begin to relax, you might find it pleasant to imagine yourself on your school's ball field. It's a beautiful day, the sun is shining, the sky is bright blue and the air is comfortably warm with just the hint of a breeze. You pause for a moment just to let yourself take in the field and enjoy the feeling of the sun and breeze. It's a quiet day; the stands are empty except for a few friends who are looking forward to practicing with you today. The scoreboard in the outfield still proudly displays the score from your team's last victory. The grass is a rich green, standing out sharply against the tan sand covering the infield. Footprints from runners rounding the bases in yesterday's game are still visible. Just let yourself take a moment to enjoy being here. (Pause) What would you like to do next?

Brian: I usually warm up first ... I think I'd like to do that for a while

Therapist: Your friends yell to you saying that they're ready to get started, you jog out to the pitcher's mound, pull on your well-broken in glove, and enjoy the familiar feel of the glove and smell of leather. You start warming up; throwing to your friend at home plate, and catching the ball as he throws it back to you. Imagine how good it feels as you start to loosen up, and each throw becomes a bit stronger than the last. Imagine how the ball feels in your hand as you prepare to throw, and how the ball feels as it hits your glove when you catch it. With each pitch, imagine yourself feeling more and more at home on that ball field, and more and more focused on your game. (This is the deepening technique used in this induction.) Just let yourself continue to enjoy warming up for a while, enjoying the beautiful day, and how good it feels to just throw the ball back and forth to your friend ... let me know when you feel warmed up and would like to continue. (A minute or so passes, Brian's breathing is clearly more regular and his body appears more relaxed)

Brian: OK, I feel pretty warm now, I'm going to start throwing some real pitches now and let these guys get some batting practice in. (Note how Brian's response indicated that he was immersing himself in the image.)

Therapist: Go ahead and let your friends know that you're ready for them to start batting. Throw whatever

type of pitch you like ... it's up to you if you'd like to give them some easy ones, or really test them with some of your best pitching. (Pause) When one of your friends does hit a pitch, imagine the crack of the bat hitting the ball, and how good it feels to jog out to retrieve that ball ... let yourself pitch to them as long as you'd like ... feel free to take a turn batting yourself as well if you'd like. (Pause) Let me know when you're ready to start wrapping up practice for now. (A minute or so passes)

Brian: OK, I think we're ready to take a break.

Therapist: That sounds fine. How are you feeling?

Brian: I feel good ... my arm is getting stronger ... we're going to do really well this season.

Therapist: Now that you know how strong you are, and are feeling relaxed and confident, you can use this strength whenever you need it. You know that you can return to the ball field whenever you need a reminder of how strong and confident you are. (Pause) When you're ready, say goodbye to your friends for now, gather your things and start walking off the field. With each step, you start to let yourself leave the ball field and start to return to your room. Gradually you begin to hear the familiar sounds of people talking in the hallway, and the overhead announcements (note care is taken not to draw attention to potentially aversive sounds such as the beeping of infusion pumps), remind yourself of the posters and pictures you've used to decorate the walls ... the blanket on your bed that you brought from home that's so nice and soft ... slowly, when you're ready, it might feel nice to move your hands and feet a bit, just to help yourself start to return fully from your trip to the ball field. (Pause) When you're ready, go ahead and open your eyes ... finding yourself fully alert, but still feeling as relaxed, confident and strong as you did on the ball field. (A minute or more passes allowing Brian to work at his own pace. Brian appears fully alert and relaxed.) How do you feel?

Brian: I feel good ... That was weird ... I really felt like I was playing ball with my friends, and my arm actually feels kind of that 'good tired' from practicing.

Brian was encouraged to try practicing his hypnosis on his own that night. The next afternoon, when our team returned to visit Brian, he reported that he was able to use his hypnosis to help himself draw his attention away from his

worries to allow himself to relax enough to fall asleep without sleep medication. Brian and his family were extremely pleased with the results of this very brief intervention, and expressed interest in learning additional ways to use hypnosis to help with specific problems, such as the nausea and headaches.

To address these issues, Brian was instructed to begin by taking himself back to the school's ball field to help him arrive in a comfortable hypnotic state. Given Brian's ease at learning this technique, direct instruction was much less than during the initial session.

Therapist: OK Brian, go ahead and get nice and comfortable just like you did yesterday. When you're ready, close your eyes and let yourself go back to your ball field. (Pause). Just let yourself enjoy being on the ball field, doing whatever you feel like doing today. (Pause until Brian's breathing becomes regular, and his body appears more relaxed). Today, while you are out at the field, some of your classmates are working on the sound system for the field. The volume is way too loud, and you know it would distract you during a game. You jog over to them and ask if you can help adjust the volume. They agree, and you begin to turn the knob on the sound board. As you turn the knob down, you notice that in addition to the sound becoming quieter, any discomfort you were feeling in your body becomes less. As you turn down the volume, your head feels more comfortable, and your stomach more at ease. (Pause). Just to check, you try turning the volume up again slightly, and note that the discomfort increases slightly as well. You turn the knob back down, marveling at how you are able to control how your body feels with just a turn of the knob. With the volume down to a reasonable level, your head and stomach feel better. Whenever you need to, you know you'll be able to help yourself feel more comfortable by just turning that knob.

A very important point to note here is that the suggestion for absence of pain or discomfort was NOT made. The emphasis was on regulating or modulating pain or other unpleasant sensations. The idea of briefly turning up the level of discomfort may seem counter-productive at first, but for many patients doing this can help increase their sense of control over the sensations.

24.7.4. Outcome

Brian continued to use hypnosis, with and without assistance from our team, and was able to manage his anxiety as well as the physical effects of his treatment. His requests for medication to manage these symptoms decreased. Given that many of these medications had a sedating effect, by minimizing their use, Brian was able to remain alert enough to engage in activities such as instant messaging his friends, playing video games, watching movies and playing his guitar. This helped him maintain connection with friends and other aspects of his life other than his illness. Being able to do this can help reduce feelings of hopelessness that can be associated with prolonged illness. When medically cleared to do so, he was also able to stay alert enough to engage in physical therapy activities which helped strengthen his body and hasten his recovery.

Brian was discharged from the hospital approximately 3 weeks after his transplant. He and his family reported a high degree of satisfaction with treatment, and Brian stated that he planned to continue to use his self-hypnosis as needed as he continued his recovery at home.

24.8. Conclusion

Our intent in this chapter was to provide a glimpse into the way that we use hypnosis on a day to day basis with patients we encounter in the medical setting. Both Nick and Brian presented with difficulties in managing their illness that seemed rather insurmountable to them at the time we first became involved in their care. Hypnosis was chosen for both of these individuals because it not only provided relief from immediate symptoms but more importantly provided a sense of competency, mastery and self-agency. By providing hypnosis to these patients, we opened up possibilities for them to exercise their own striving toward healing. Both of them needed rather immediate attention because time was at a premium, and in our experience hypnosis can be used rapidly as long as proper rapport has been established.

Nick's case illustrates the importance of embedding hypnosis within a wider context of other

therapeutic techniques. For example, if only hypnosis were provided to Nick in the hospital without any follow-up care for his re-entry into school, the gains he had made in the hospital may have been very short-lived. The benefit of using hypnosis early on in his care provided the opportunity to build rapport rapidly within a short amount of time. This was instrumental in facilitating continued cognitive-behavioral work later to address his anxiety.

Brian's case illustrates the need to provide complementary care within the full range of care he received while in the hospital. It worked to enhance his stay and made his discomfort more manageable. Complete symptom removal for Brian was not the initial treatment plan. A great deal of his pain and discomfort was alleviated, but avoiding the goal of complete remission prevented a set up for failure. This is why there should be a high premium placed on gathering information about patient's expectations regarding hypnosis prior to beginning treatment.

Hypnotic interventions for both Brian and Nick were highly specialized and could only have been done after a fairly thorough initial evaluation. When it was learned that Nick was a racing car fan, the treatment team began to think of metaphors that would incorporate opportunities to instill a sense of mastery, competency and relief from both anxiety and pain. The same was true for the work done with Brian in that the image of a baseball field was highly rewarding and interesting for him. In both of these cases, listening carefully to the patient for important aspects of their personal lives was the key to engaging the subject hypnotically. As a result, carefully choosing an induction or deepening technique was not of the utmost importance for either patient. Rather it was the relationship and the attention to detail of both of the therapists to notice what was of particular interest to each patient. This is an intentional part of the work that we do in hypnosis with our patients. In that sense we are not highlighting hypnosis, but rather sound therapeutic techniques. Solutions are discovered when we stop to listen to our patients, and it is noticing their striving to be competent and noticing their uniqueness that we find a therapeutic key to unlock solutions to their problems.

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CHAPTER 25

Medical illnesses, conditions and procedures

Nicholas A. Covino

25.1. Introduction

Medical patients present an important clinical opportunity for mental health practitioners. No longer do persons in need of psychological care walk primarily through the hospital door marked: 'Psychiatry'. Pediatricians and primary care doctors are, increasingly, the front line interventionists treating depression and anxiety in children, adolescents and adults (Pincus *et al.*, 1998; Rushton *et al.*, 2000). More recently, oncologists, cardiologists and those who care for patients with chronic diseases such as asthma, irritable bowel syndrome (IBS) and diabetes see the benefits of psychological care for their patients. The major risk factors for illness and mortality (e.g. anger, nutrition, smoking and medical adherence) have psychological roots; most illnesses have psychological consequences, and vexing medical complaints (e.g. insomnia, IBS) are heavily influenced by cognitive, affective and behavioral factors.

Psychoanalysts use the term 'surface' as a metaphor to describe a focus of patient care. Psychotherapeutic interventions with medical patients can occur on several such surfaces. They can assist with symptom relief, increased

compliance with medical procedures and improved adherence to medical care. Some patients and medical problems involve simple disorders of arousal inviting the well-known changes in respiration, heart rate, muscle tension, blood flow and pressure, motility and glucose production that accompany changes in autonomic nervous system activity. For these, relaxation and distraction interventions can be sufficient to produce symptomatic relief. However, as conditioning principles, co-morbid affective disorders and/or psychodynamic conflicts enter the picture, the success of any intervention (medical or psychological) can become quite compromised. Figure 25.1 depicts four variables of influence upon medical patients that, also, offer avenues of access to ameliorate and improve mental and medical health. As the model indicates, some medical problems will be heavily influenced by one dimension or another, or several. However, even the patient with a disorder of arousal can bring behavioral, affective and psychodynamic problems to the illness.

Psychological interventions that include hypnosis can be useful to patients and providers at each of these points. This chapter will review the figured dimensions of health and illness, present several hypnosis techniques to assist with the

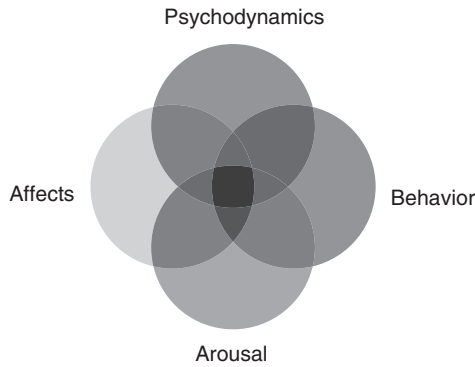


Fig. 25.1 Variables of influence upon medical patients.

care of the medically ill and offer a few illustrative case reports.

An important prelude comment: mental health practitioners, who work among these patients, must pay special attention to the alterations in mental status that are common consequences of medications and/or certain medical illnesses (Preston *et al.*, 2004). It is not sufficient for the nonphysician to cede this responsibility to medically trained providers. It is everyone's responsibility who works in medicine to monitor and evaluate the potential consequences of medicines and illnesses on patients' thoughts, affects and behaviors, and to make appropriate referrals.

25.2. Problems of arousal

The early work of Holmes and Rahe (1967) and Benson (1975) extended the theories of Cannon (1932) and Selye (1956) to present a link between stressful events, arousal and physiological response. Lazarus and his colleagues (Lazarus and Folkman 1984) aided our understanding that *cognitive* factors were the critical agents in moderating a stress or eliciting the 'relaxation response' in patients. It is not only beauty that is in the mind of the beholder, they propose, but danger, apprehension and the meaning made of life events will vary for individuals and can be modified by psychological means (Folkman *et al.*, 1979).

Early psychosomatic research was preoccupied with identifying personality factors and

stressors believed to have a causative role in illness onset. As the field progressed, medical illnesses are taken more as physiological 'givens' with greater interest in identifying psychological factors that influence and are influenced by medical illness and procedures.

25.2.1. Medical procedures

Medical procedures as simple as inoculation, phlebotomy, dental work and diabetes care or as complex as surgery can be stressful occasions for patients and alter their autonomic nervous systems. When hypnosis was offered to patients undergoing invasive diagnostic or surgical interventions in radiology, the procedures were more rapidly completed and the patients experienced greater comfort (Lang *et al.*, 1996, 2000). In these similar studies, patients were allowed to control their medications and they reported significantly less anxiety, required less pain medication, completed the procedures more frequently than the nonhypnosis group, and maintained greater hemodynamic stability during the procedure. Also, the medical team required less time to complete the procedure when patients were aided by hypnosis versus attention alone or standard care. Children with cancer have been more effectively aided by hypnosis than standard care and distraction when they undertook lumbar puncture and bone marrow aspiration procedures (Zeltzer and LeBaron, 1982; Lioffi and Hatira 1999, 2003). A group of children found that the trauma and pain associated with voiding cystourethrography (VCUG) procedures were reduced with hypnosis, as was the time required for the procedure (Butler *et al.*, 2005). In an age of managed care, an intervention that allows for speedier work, quicker recovery and greater patient comfort is highly valuable in the medical setting.

25.2.2. Psychophysiological insomnia and functional gastrointestinal disorders (FGID)

Psychophysiological insomnia and FGID are mind-body problems of arousal that are highly influenced by cognitive processes. Insomniacs use increased oxygen during the day and at night (Bonnet and Arand, 2003); demonstrate

persistent elevations in temperature, heart rate, basal skin response and vasoconstriction prior to and during sleep (Bonnet and Arand, 1995, 1998); and report more frequent pre-sleep negative cognitive activity (Nelson and Harvey, 2003a,b). A repetitive cycle of arousal, that includes catastrophic thinking, increased cardiopulmonary activity, the release of hormones and neurotransmitters, and maladaptive behaviors, maintains the disorder. Sedative medications are sometimes prescribed, but psychological therapies that emphasize relaxation, cognitive restructuring and 'sleep hygiene' (e.g. scheduled bedtime, avoiding naps, leaving the bed when sleep is delayed, etc.) are medically recommended treatments (National Institutes of Health, 2005). Likewise, patients with FGID commonly show increased gastrointestinal motility in the face of psychophysiological arousal (Drossman *et al.*, 1997; Casati, 2000) and the absence of symptoms and dysmotility during sleep (Kellow *et al.*, 1990; Fukudo, 1993).

As the model in Figure 25.1 indicates, patients with these problems might present with behavioral, affective or psychodynamic issues that will complicate the treatment of insomnia and FGID. Cognitive-behavioral therapy (CBT) has been effective in providing significant relief and symptom reduction for these patients, within a short period of time (Blanchard 2001; National Institutes of Health, 2005). In randomized, controlled studies, patients treated with CBT showed significant improvement in sleep latency and efficiency over relaxation training and a commonly prescribed sleep medicine, and reported greater satisfaction with their treatment at 6 months (Jacobs, 1993; Edinger *et al.*, 2001). Bastien *et al.* (2004) found that this intervention could be delivered as effectively through a 20-min telephone call as in a 90-min group or 60-min individual session. Likewise, CBT interventions have provided relief, within several weeks, to FGID patients in clinical studies versus symptom monitoring or standard care (Blanchard *et al.*, 1992) and when tested in wait-list and crossover designs (Tkachuk *et al.*, 2003).

Unfortunately, the effectiveness of hypnosis interventions for insomnia patients has not been rigorously studied. Case reports and clinical experience indicate that the results achieved by CBT interventions could be achieved with

hypnosis, but empirical evidence in this area is lacking. On the other hand, sufficient research exists to support the efficacy of hypnosis interventions for FGID patients. Early work by Whorwell and his colleagues (Whorwell *et al.*, 1984, 1987; Prior *et al.*, 1990) found symptom reduction and, even, symptom elimination within weeks of care. Recent investigations with similar protocols found that these gains are maintained at 4 months (Palsson *et al.*, 2002; Gonsalkorale *et al.*, 2003). The weight of these studies suggests that patients with problems of psychophysiological arousal can be simply treated by an intervention that alters perception (e.g. cognition and sensation) and encourages deep relaxation.

25.2.3. Case report: FGID and IBS

25.2.3.1. Background

Adam, a businessman in his mid-thirties, was referred by his gastroenterologist for help with IBS. Since college, he has experienced regular periods of bloating, dysmotility during times of stress, loose stool, fears of urgent bowel movements, frequent bathroom visits and abdominal pain relieved by bowel movement that fulfilled the Rome I criteria for IBS. Of late, these episodes could be as frequent as several times per month. Nonprescription medicines (charcoal) and dietary management offer him some, but incomplete, relief. Often, Adam finds himself anticipating social situations with a need to plan bathroom stops. It is common for him to purchase aisle seats at concerts and plays so that he will not have to 'walk over people and call attention to myself' when he needs to use the toilet. He recalls a family trip in his teens, during which his father failed to respond to his request to stop the car at a bathroom, resulting in an embarrassing, urgent, bowel moment in his pants, which he concealed.

Happily married for 6 years with a 5-year-old son, Adam is considering a move to another job for professional reasons. While he reports that change has always been challenging for him and that he is apprehensive about making the move, he is able to pursue his career with some energy. The eldest of five children, he is a frequent visitor to his nuclear family for Sunday dinners. He describes his father as critical and disconnected

and his mother as a generous, nurturing person, but one who ‘keeps score’ on who is present for extended family events and shows a cold shoulder to anyone who pursues other plans. For some time in his early marriage, he visited his mother weekly, in addition to family dinners, and she maintained responsibility for some of his personal business affairs.

25.2.3.2. Formulation

Issues of autonomy, self-assertion and shame are evident in his history, and it is easy to see his worry concerning this new phase of his career and the general assumption of the role of emancipated adult. With a mother who actively rewards the ‘child’ dimension of her ‘adult-children’ by cooking weekly Sunday meals and playing a role in their business affairs, one might expect to see Adam’s worry mount as he is required to pursue a new career frontier. It is unclear why psychophysiological arousal is located in his gut, as it almost always is, but his worry mounts with significant moves from the safe haven of his nuclear family to explore new vistas on his own. Father’s criticism invites self-doubt, and his mother’s obvious disapproval for those who dare to depart from the family, as she defines it, make emancipation a risky and worrisome business. Comfort with attention to his own personal needs is difficult for Adam, and he projects that others will notice and be annoyed by his requests for space, be these requests for a job interview or room to pass in order to get to the bathroom. It becomes important to plan his trips and social events excessively so as to manage his expected crises. Such images, also, produce their own disruption of arousal and gut functioning.

It is important to see the considerable mental health that this man possesses. In spite of his family style, he has married well and is the father of a happy child. His work challenges are age-appropriate, albeit with some physiological symptoms, and he has a good deal of success to show for himself at an early age. Although therapy is new to him, Adam is very bright, articulate and has the capacity for self-reflection. His wife is supportive and patient.

25.2.3.3. Treatment

Most interventions begin with patient education regarding gastrointestinal functioning and

the mind–body connection in IBS. In plain language, the link between cognition, psychophysiological arousal and gastric motility is explained. In addition, developmental and family styles that contribute to increased arousal at predictable stages are described. In a brief treatment, less time is spent with uncovering other material, abreaction or family interventions. Likewise, the repetition and working through of autonomy and issues of criticism and disapproval within the doctor–patient relationship are left for more extended psychotherapy.

Through hypnosis, Adam was taught to relax by imagining and experiencing limp and heavy muscles from head to foot, and to experience the mind–body relationship by hand levitation. Training in hand warming and cooling developed the suggested idea that: ‘The body follows the lead of the mind and what the mind thinks, the body does’. By attending to his cognitive process, Adam was taught to identify several dysfunctional thinking styles (e.g. catastrophizing, overgeneralization). He used hypnosis to concentrate on restructured thoughts as well as to imaginatively expose himself to experiences of gastrointestinal (GI) ‘accidents’ with the accompanying feelings of fear, shame and subsequent acceptance.

25.2.3.4. Treatment outcome

Adam’s considerable strengths, along with the specific nature of his problem of arousal, contributed to a successful and brief treatment course. Most IBS patients who are treated with this protocol show significant improvement within a short period of time. After 2 months of weekly sessions, Adam reported considerable relief from his GI symptoms along with independence from illness preoccupation and diminished anxiety. With the help of his wife, he reworked his overinvolvement with his family of origin and began to attend family gatherings intermittently and when they suited the needs of his new family. Within 6 months, he was gainfully employed in a much more satisfying position.

25.3. Problems of behavior

Certain stimulus conditions shape behaviors that have considerable relevance in medicine. Whether through direct, indirect or fantasized associations

(i.e. classical conditioning) or various schedules of rewards and punishments (operant conditioning), humans learn to anticipate certain outcomes, avoid problematic experiences and develop curious responses to otherwise neutral or unrelated stimuli. In the medical setting, problems of behavior such as hyperemesis (i.e. persistent nausea and vomiting) and cigarette smoking present significant health consequences. In addition, avoidance behaviors, phobias and other conditioned phenomena can interfere significantly with proper medical management.

Cancer patients undertake intensive pharmacological treatments with lengthy and almost unpronounceable names (e.g. cyclophosphamide/methotrexate/5-fluorouracil, 5-fluorouracil/doxorubicin/cyclophosphamide) that produce severe nausea and vomiting. Even with the application of new anti-emetic medications, patients experience extreme physical and emotional discomfort. Classical conditioning processes link the smells, sights and thoughts of treatment with the medications' unpleasant physical side effects to create anticipatory nausea and vomiting (ANV). On a subsequent visit to the hospital, following an aversive experience with chemotherapy, some associated stimulus, such as the smell of the hospital or the image of the nurse, evokes an episode of nausea and vomiting prior to undertaking treatment. ANV is among the most aversive and feared of the side-effects from cancer care, and is a major cause of noncompliance and premature termination of treatment, especially among younger people (Zeltzer *et al.*, 1991).

Behavioral techniques such as distraction and systematic desensitization have been effective at reducing ANV in this population (Redd *et al.*, 2001). Exposure techniques that utilize imagination and *in vivo* techniques to present fearful images and experiences gradually to patients are able to reduce the power of these stimuli to produce ANV (Redd *et al.*, 2001). The antiemetic effect of systematic desensitization has been found to be superior to counseling and standard care (Morrow and Morrell, 1982). Distraction and relaxation techniques also have shown significant reductions in patient distress and ANV symptoms (Vasterling *et al.*, 1993). When hypnosis was tested against these relaxation and distraction techniques in a randomized experiment with children, it produced the greatest reduction

in anticipatory and post-chemotherapy symptoms (Zeltzer *et al.*, 1991). Reliance on antiemetic drugs and the incidence of nausea and vomiting were both diminished when children were trained to use hypnosis to manage these (Jacknow *et al.*, 1994).

25.3.1. Cigarette smoking

Cigarette advertisers capitalize on conditioning principles by repeatedly pairing a harsh, odorous, carcinogenic product with beautiful people and situations. In addition to the positive messages, cigarettes relieve burdensome affects (negative reinforcement) and stimulate (reward) the mesolimbic system in pleasurable ways. However, a combined program of psychological and pharmacological interventions enables a substantial number of smokers to free themselves from this health-compromising habit (Hughes *et al.*, 1999).

Analyses of the literature regarding the efficacy of hypnotic interventions with smoking cessation find that despite methodologically limited investigations, hypnosis can make a specific contribution to the treatment of this problem (Lynn *et al.*, 1993; Greene and Lynn, 2000). A meta-analysis of more than 600 studies, involving more than 6000 patients, found a quit rate of 36 percent for those patients who were offered hypnosis interventions (Viwesvaran and Schmidt, 1992). This result compares quite favorably with the small numbers (e.g. 3–10 percent) who quit on their own or with doctor's advice each year (Hughes *et al.*, 1999). Behavioral techniques play a significant role in smoking cessation, with aversive interventions such as rapid smoking and stimulus control techniques such as restricting smoking behaviors to certain times and places contributing to a positive outcome (US Department of Health and Human Services, 1996). Nicotine replacement, through the use of chewing gum or transdermal patches, minimally contributes a 2-fold increase in success rates for smoking intervention programs (Gourlay and Benowitz, 1996). By helping patients to manage nicotine withdrawal and, probably, by reducing the satisfaction derived by tobacco-delivered nicotine, these pharmacological contributors permit the psychological work to take effect without physiological challenge.

Spiegel (1970) presented a motivational technique that assumed the pleasures of smoking, but

invited patients to see its deleterious impact upon their health. The mantra: ‘Smoking is a poison to my body. I need my body to live. I owe my body trust and protection’, has been recited by thousands of former smokers. In fact, the majority of hypnosis research studies have employed this method. Unfortunately, clinical research in this area suffers from the absence of multimodal designs that integrate behavioral techniques, nicotine replacement and psychological strategies into treatment plans that are beyond the motivational (Covino and Bottari, 2001). As the clinical example below indicates, smoking cessation treatment should include demonstrated cognitive-behavioral techniques, pharmacology and a variety of hypnosis interventions to assist patients optimally.

25.3.2. Case report: nicotine dependence

25.3.2.1. Background

Joan is a single woman in her early 40s who had been a pack-a-day smoker since the middle years of college. She made three efforts to stop smoking in recent years and was successful for as long as 6 months. During both of her pregnancies she did stop smoking, but returned to it shortly after the birth of the children, because she enjoyed the habit. At times of boredom and increased arousal, Joan believes that cigarettes ‘comfort’ her. She is critical of her ‘past failures’ to stop and expressed a strong wish to do so now. ‘I have to quit for the health of my children, and I am now afraid of developing emphysema. I hate what this nasty habit is doing to my skin and the constant odor it gives to my clothes and car’. Joan’s primary care doctor recently cautioned her about a developing problem of shortness of breath due to cigarettes, and she has become increasingly concerned that her smoking status interferes with her social life. Past efforts at smoking cessation have not included nicotine replacement or the assistance of any program.

Successfully employed in the computer industry, Joan is a bright woman with a supportive network of family and friends. She has been amicably divorced for the past 6 years and is in regular contact with her children. Although she describes periods of dysphoria, Joan does not

have a personal or family history of affective disorder or substance abuse. Family history is unremarkable, with Joan being the second child of an intact, working class family. Exercise and fitness are important to her, as is the development of a more active social life with a goal of marriage.

25.3.2.2. Formulation

Joan has a lengthy history of nicotine dependence and an average habit of use. She attributes smoking with self-care and comfort, and her habit is negatively reinforced by the way that smoking diminishes her unpleasant feelings of boredom and anger. Joan’s words indicate that she is ready to undertake a treatment program and that she has a number of personal motivations to quit. For several brief periods, she has been successful in the past, but the motivation for stopping diminished with the birth of her children. A brief review of her personal and family history is unremarkable for affective disorder, substance abuse or significant mental illness. Unless psychological issues interfere significantly with her treatment, the history will remain incomplete, which is a not uncommon scenario for people who seek treatment for this problem.

25.3.2.3. Treatment

A ‘quit-date’ is established for 3 weeks time and Joan is educated in the psychological and physiological dimensions of cigarette dependence. A transdermal patch is purchased to allow her to control nicotine withdrawal for a period of 3 months, while she manages the psychological dimension of her habit. Behavioral techniques such as stimulus control, aversion and extinction are reviewed, and an action plan is developed.

Joan will increase her attention to the aversive aspects of her habit by rapidly smoking two cigarettes in succession for each of the next 5 days. With this rapid smoking technique she will blow the smoke into a folded sheet of paper and re-breathe it to increase her awareness of the noxious aspects of smoking. Smoking will be allowed only in a designated place and not in the car or immediately after meals, in order to diminish the power of discriminative stimuli such as meals, coffee, television and the automobile. During the second week, she will smoke

only during two designated 5-min smoking times in an effort to disconnect emotions and smoking behaviors. She began to make a list of those whom she would tell of her decision to stop, as well as some items to purchase with her unspent cigarette money.

Hypnosis training began in the first week with suggestions for relaxation and distraction. Joan was taught self-hypnosis and instructed to use this several times each day. Spiegel's technique was taught, along with imagery involving her healthy presence at the marriages of her children and the birth of grandchildren. In the third week, Joan took a 'practice quit day' prior to the scheduled event, by abstaining from cigarettes for the day. The hypnosis exercise for that day involved inviting her to: hold the pack in her hand; cut the cellophane wrapper with the red ribbon; open the foil and smell the sharp fragrance of the 20 friends that she knew so well; take one of the cigarettes from the pack and feel the bite of the dry cotton filter as it touches the tongue and, perhaps, becoming aware of the mouth salivating in anticipation of the taste of smoke; striking a match, listening to the burning sulfur and being aware of its distinctive smell; take a deep anticipatory breath . . . blow out the match and let the cigarette fall to the floor; relax the body from head to foot.

Having learned a method of managing a craving for cigarettes, Joan decided to begin with the transdermal patch and continue with not smoking, even though she was several days ahead of schedule. A meeting was scheduled for 3 days hence, during which Joan, who was still not smoking, used hypnosis to practice coping with several situations in which she feared that she would be likely to smoke.

25.3.2.4. Treatment outcome

A telephone call to Joan in 2 weeks found her abstinent from smoking, and a report from her physician at 6 months confirmed the same.

25.4. Problems of affect

25.4.1. Anger, anxiety and depression

Anger, anxiety and depression are common comorbid conditions in medicine. In cardiovascular

disease, for example, anger is a well-established, but undertreated, precursor of myocardial infarction. A long line of longitudinal research establishes overcontrolled hostility at the same level of risk for heart attack and cardiac death as smoking and obesity (Rosenman *et al.*, 1975; Williams *et al.*, 2000), yet little preventative work is done in this area. Panic disorder is a prime mimic for coronary artery disease (CAD). More than 30 percent of those who are admitted to the emergency wards with chest pain are found to have panic disorder and not cardiovascular disease (Borzecki *et al.*, 2000). Often these patients are sent home with the 'good news' that they do not have CAD, but with considerable uncertainty and worry, often leading them to repeat emergency room visits and excessive use of medical services (Huffman *et al.*, 2002). Persons who experienced an episode of major depression prior to their middle years die of cardiovascular and unexplained causes more frequently than their non-depressed counterparts, even when poor health habits such as smoking and alcohol abuse are controlled (Wulsin *et al.*, 1999, 2005).

25.4.2. Pain

Pain is the most prominent medical complaint where patients often suffer from anxiety, depression or a mixture of both (Banks and Kerns, 1996). Co-morbid affective disorders increase the difficulty of successful medical treatment for pain patients, often requiring the addition of psychotropic medications and adjunctive psychological treatments. The efficacy of hypnotic interventions in this area has been well reviewed and is encouraging (Patterson and Jensen, 2003). Since this text includes an entire chapter devoted to the subject by two experts in the area (Chapter 20), pain management will be omitted from this review.

25.4.3. Asthma

Asthma is a chronic disease of the pulmonary system with which patients experience wheezing, shortness of breath and increased production of mucus in response to infection, allergy or exercise. These symptoms can be reversed by medications, but they are often made worse by anxiety. Approximately 25 percent of those with asthma and chronic obstructive pulmonary

disease (COPD) suffer from panic disorder (Karajgi *et al.*, 1990). A recent, longitudinal, study found that asthmatics had a 4.5-fold lifetime likelihood of developing panic disorder and, interestingly, those with panic disorder were six times more likely to develop asthma in their lifetime (Hasler *et al.*, 2005). Hypersensitivity to interoceptive cues leads to a cyclic response of catastrophic thinking, increased psychophysiological arousal, hyperventilation, increased dyspnea, panic and then increased hyperventilation and dyspnea. Since benzodiazepines reduce the drive to breathe, complex cognitive-behavioral and serotonin-based medicines are often required as interventions for this population (Smoller *et al.*, 1998).

For decades, pulmonologists have known that psychological factors can make asthma worse. More than 23 studies have demonstrated that suggestion for airways obstruction (commonly when saline mist is presented as a bronchodilator) leads to clinically significant change in pulmonary function for more than one-third of asthma sufferers (Isenberg *et al.*, 1992). On the other hand, some clinical research finds that asthma patients who are trained to manage their fear with hypnosis are able to reduce symptoms and medication dependence (Maher-Loughnan *et al.*, 1962) as well as increase their pulmonary functioning (Ben-Zvi *et al.*, 1982; Ewer and Stewart, 1986).

Patients with problems of affect need to manage both their significant emotional distress and their medical symptoms. Untreated affective disorders, be it depression or anxiety, will defeat an otherwise appropriate medical plan. Hypnosis can be quite beneficial as part of a comprehensive biopsychosocial intervention for patients with chronic pain, cardiovascular disease and asthma.

25.4.4. Case report: bronchial asthma

25.4.4.1. Background

Kate is a 43-year-old woman who was referred by the pulmonary department following a severe asthma attack that she experienced while traveling with her partner in Spain. A patient with asthma from childhood, she has been quite well maintained for years by inhaled medicines that she took when needed. Both the patient and

the medical team believe that this severe asthma attack was triggered by an allergic response to something that she ate while traveling. Kate was alone at a restaurant and became quite frightened about her condition, the availability of medical care and if her partner could find her, should she require hospitalization. Although the episode subsided and they returned to the country immediately, it has been very difficult for Kate and her doctors to manage her asthma without steroid medications. Since her return, Kate has continued to experience daily episodes of shortness of breath and considerable anxiety. She is currently on a leave of absence from work, due to this illness.

Anxiety and panic have been problems for Kate since she was a child. Although she is a successful salesperson, she acknowledges regular episodes of sweating, palpitations, tingling, nausea, lightheadedness and shortness of breath. She was treated by a cognitive-behavioral psychologist several years ago, who instructed her in relaxation and distraction techniques which gave her some relief. Only on occasion have the anxiety symptoms interfered with her work. and she and her doctors developed a ritual for coping with her anxiety and shortness of breath that includes the use of inhaled medications and relaxation. Despite the recent crisis, Kate does not recall any specific food allergies, but she does become symptomatic in the presence of smoke and some animals.

For the past 10 years, Kate has been in a committed relationship. Frances is a computer technologist whom Kate describes as loving, supportive, strong and intellectually curious. The two enjoy traveling and they have been to many parts of the world, as a side benefit of Kate's sales position. Kate is an only child whose father had a heart attack at work and died, when she was 12 years old. He was a high school teacher to whom she felt a very close attachment. Subsequent to his death, Kate's mother became depressed and difficult to relate to. Kate remembers feeling apprehensive about leaving home for college, and experienced some significant anxiety and occasional panic attacks during her freshman year. It was then that she contacted the college Counseling Center and was referred to the psychologist whom she found to be quite helpful. Kate dated some in college and found a network of supportive friends with

whom she remains in contact. Apart from her asthma, she is in very good health and usually takes only the inhaled medicines when she feels considerably short of breath.

25.4.4.2 Formulation

Separation and loss have long been held as psychological issues that complicate asthma. Although research finds that these dynamics can be common to any patient with a chronic illness and that many asthmatics do not present with such issues, Kate's experience of shortness of breath is likely to be exacerbated by her tendency to panic.

At the least, Kate's father's death at an early age and her mother's withdrawal left her at the mercy of considerable anxiety. Most children find it difficult to feel safe in the aftermath of the death of a parent, and this is complicated by Kate's mother's disciplinary style. The inability of children to provide for themselves is heightened when parents choose withdrawal of affection and unavailability to show their displeasure with a child's behavior. Such a style might have been preferred by Kate's mother, even prior to her very early teen years, but the threat of parent loss, even for a short period of time, would be quite frightening for a youngster who had already experienced parent loss by death. Kate's relationship with her mother seems to be quite conflicted, and it seems that she has not had an opportunity to grieve her father's death adequately.

25.4.4.3. Treatment

After the initial interview, the pulmonary nurse practitioner prescribed Sertraline to manage some of Kate's anxiety. Initial work in hypnosis reviewed some of the historically successful uses of imagination to relax, distract and reassure her in the face of an experience of shortness of breath. Diaphragmatic breathing was rehearsed in hypnosis along with scenes in which she pictured herself coping effectively with an asthma attack by relaxing, taking a few puffs of her medications and picturing herself seated in a comfortable, safe spot. With that comfortable spot established, Kate was instructed, in hypnosis, to say a number that described the state of her breathing difficulty; to picture a situation and experience thoughts and ideas that would make it

slightly worse and rate that; then to return to her baseline. This lesson was rehearsed a number of times with Kate allowing her distress to increase by several numbers.

Because of her considerable anxiety and the fact that she was out of work, treatment was accelerated to alternate days. Kate was able to ambulate and to leave home for brief periods on her own, but was still apprehensive about returning to work. She was encouraged to make a plan with her employer to take several sick days in the subsequent week and to return for half days at the end of that week. On the third session, an affect bridge technique was employed to facilitate her associations with the panic. With little challenge, Kate recalled a number of childhood experiences during which her mother, displeased by Kate's behavior, refused to speak to her. She flushed, perspired and became visibly shaken as she recalled her fears that mother would become lost to her, as was her father.

In subsequent sessions, Kate developed a hierarchy of difficult situations in which she imagined becoming short of breath, feeling the tightness in her body, light headedness and shallow breathing. Each image was gradually presented in hypnosis to experience imaginatively, until Kate could maintain total comfort with the most difficult scene. Since she, surprisingly, did not include a restaurant scene in her hierarchy, several were presented, leading her to the same level of comfort.

25.4.4.4. Treatment outcome

By Wednesday of the second week, Kate returned to work for half a day. She felt well enough to return for the full day by Thursday, leaving on Friday only to attend our session. She was able to resume her daily activities with relative calm and comfort by the end of that second week (six sessions). However, weekly psychotherapy was scheduled for the next 8 months to discuss her relationship with her mother and the unresolved grief at the loss of her father. Near the end of her psychotherapy, she wanted to discontinue the Sertraline and worked with her nurse practitioner to do so. Kate was able to return to the use of p.r.n. medications for her breathing and maintained a regular habit of meditation to manage her emotional distress.

25.5. Problems involving psychodynamics

Recent debates regarding suggestion and memory have revived the Freudian indictment of hypnosis as a lesser, and sometimes dangerous, vehicle for psychotherapy. The field's recovered preoccupation with the validity of psychotherapeutic material brought forward with the aid of hypnosis has, unfortunately, dampened the enthusiasm of researchers and clinicians for its use as a psychotherapeutic tool. Yet, it is precisely because hypnosis offers patients and providers the opportunity to employ fantasy, interpersonal relationship and suggestion to alter cognition, affect and behavior that clinicians must rediscover this useful technique for medical care.

Many patients have difficulty finding words to describe their affective distress, which then becomes expressed somatically. Like hyperemotional children, such patients 'show' physical symptoms, because they have difficulty 'telling' of their distress. Hypnosis can be a vehicle for some to identify and find words and symbols to express their emotional distress in a 'trance-itional' space that leads to increased control and decreased arousal. Chapter 16 of this volume is a fine place for the interested reader to become acquainted with the use of hypnosis as a developmental, psychotherapeutic technique.

Individuals make meaning of their illness and their experience with caregivers that can be uncovered, articulated and reworked with the aid of well known projective techniques in hypnosis. The opportunity that hypnosis brings for patients to distance themselves from emotions, attitudes and fears 'discovered' in hypnosis is a well known advantage to clinicians. The potential for hypnosis to alter or assist with the management of traumatic memories can be quite helpful to medical patients who anticipate experiencing pain, for example, in much the same way as they have in the past. Much can be gained, and little lost, if the imaginative material is taken symbolically rather than literally.

In many medical situations, the personality characteristics and intrapsychic conflicts (or cognitive schemata) of the patient must be managed, since time does not permit much psychotherapeutic intervention. Whether to

motivate, to accommodate or to negotiate, the patient's characteristic style of thinking, feeling and behaving can be addressed through hypnosis and managed to benefit the patient. For the purpose of this discussion, this construct will be labeled 'personality style'.

One of my teachers said that a great advantage of using hypnosis in psychotherapy was that the patient had to be quiet and listen to the therapist for as long as the therapist wished as he exhorted him to change! In longer term psychotherapy, characteristic patterns can be ameliorated or transformed. In brief treatments without sufficient time for personality change, they must be negotiated with lest the most empirically supported treatment becomes defeated by the patient's resistance to or conflict about becoming well.

Often, important relationships can be imaginatively recruited to provide comfort for the suffering or anxious person. Sometimes, a mantra can be created to motivate someone to complete a procedure or get through a treatment. In brief treatments (which are commonly those of behavioral medicine), it is the therapist who changes the most! Our patients require us to adapt to their personality style and needs in order to help them to *accommodate* to medical treatments and symptom management, more than to offer insight into their core beliefs and conflicts in order to achieve structural or personality change. Well-trained mental health providers are able to offer considerable assistance through hypnosis to medical patients, as the following case report indicates.

25.5.1. Case report: pre-surgical anxiety

25.5.1.1. Background

Jack is a 77-year-old man who will undergo knee replacement surgery in 3 weeks. This is his first surgical experience and he is apprehensive about the pain associated with the recovery and, vaguely, but significantly, fearful about the procedure. An older friend had a similar surgery and recovered well, but he described a long and difficult rehabilitation. Despite the fact that his doctor has assured him that this surgery will be uncomplicated, Jack is quite apprehensive about it.

'I don't feel that I deserve a successful outcome', he reports. Jack's marriage of 40 years has been a distant and less than satisfying one. The early and middle years were characterized by a good deal of argument and bickering that gave way to the couple having largely independent, loveless, lives. He describes his wife as overbearing and self-centered, and himself as someone who has forfeited control over his life. The couple have three children who live a considerable distance away, and they have no grandchildren. Recently, Jack had a falling out with the only child with whom he has a relationship. Angry about his son's offer to have him as a guest during his recovery from surgery, Jack yelled that he did not want nor need his help and wished that he would leave him alone. His two daughters are married, but he hasn't had much of a relationship with them for more than 20 years.

Raised as an only child by his mother and grandmother, Jack's parents divorced when he was quite young. He never saw his father and recalled very few males in his life. He was a studious boy and succeeded in school, but his family lacked the funds to support college. Jack went to work in his teen years and found himself a successful career in sales. After many years of Catholic education, Jack feels that he never measures up. Criticism has been a way of life for him, both as donor and as recipient. A recent involvement with a group of Pentecostal Christians has been eye opening and affirming. The passion, liveliness and the acceptance that he finds in this group has been healing.

Jack does not drink and does not report a family or personal history of affective disorder nor major mental illness.

25.5.1.2. Formulation

Jack's history of anger and difficulty with closeness is in contrast to a rather charming interpersonal presentation. In spite of his charm, closeness with others is difficult for him to acquire and to maintain.

There is a sad and rather masochistic quality to the relationship with his wife and family. Jack is neither able to leave his marriage nor improve it. Likewise, he is frightened by his son's overtures of care and concern, and pushes him away. His family history is without much joy and he has recreated a detached, joyless life for himself as an adult. Anger, guilt, self-criticism, distance

and suffering cycle within his life and leave Jack a disconnected man. His wish for closeness is somewhat satisfied by an assumed charm that is engaging but difficult to maintain or to develop with authenticity. Despite his pessimism and disconnection, he does reach out for help with this surgery and has the capacity to speak with some degree of openness about his fears.

25.5.1.3. Treatment

Given the need to work quickly, five sessions were scheduled, following the initial evaluation. In the first two hypnosis sessions, Jack was quite able to use hypnosis to find a place of comfort and succeeded in producing a number of ideomotor alterations of perception. Ego strengthening suggestions were offered and received. Jack used the trance to recall several experiences in his life where he was able to accomplish something that he feared that he was unable to. The images, feelings and physical sensations (e.g. how he held his head, the strength of his shoulders) that accompanied these gains were experienced, again, with hypnosis.

Despite his charm and friendliness, it seemed wise, given his anxiety about closeness, to adopt the stance of a coach or teacher, rather than that of a comforting friend. In the third hypnosis session, an affect bridge technique was employed to explore more about Jack's sense of unworthiness. In hypnosis, he followed this idea and the attendant feelings to recall the argument with his son and several incidents in his life that involved expressions of significant anger. Regret and tears accompanied memories of arguments with his wife and daughters, and the loss of a very good friend in his thirties.

In the fourth session, additional work with the affect bridge led Jack to recall an argument with his mother when he was about 8. A conflict around chores escalated to shouting and threats of physical punishment. Jack's mother withdrew in tears and his grandmother scolded him for upsetting her. He recalled his grandmother saying that Jack's father left the family because he couldn't handle parenting and that Jack should behave better for his mother. Tears and a profound sense of sadness disrupted the trance, but Jack was able to talk openly about his previously unarticulated sense that he was responsible for his parents' divorce. His sense of being unloved by his father

who never made an effort to have a relationship with him was quite profound and very sad.

In the fifth session, Jack was invited in hypnosis to picture a committee meeting, similar to a Board of Directors. As he looked about the room, he imagined people with strong opinions about a proposal that he had made to them. Several were very worried about the impact of his plan on the company; some were angry about the proposal's scope and at Jack for daring to present it; others were in agreement with his plan; and others even admired his wisdom, patience and courage. As Jack reviewed the faces around the table and listened to their points of view, he was instructed to understand that there were many points of view and emotions around the table and that this diversity of strong opinion is almost always present around important decisions in life. His job, as chairperson, is to balance these and not just listen to the loudest or the most intense voices. Having received their input and with the understanding that there are many ideas and feelings, a number of them in agreement with him, Jack is free to proceed with his plan.

In the final session, Jack uses hypnosis to visualize his trip to the hospital. Emphasis is paid to the sights, sounds and smells of the various scenes which serve as cues for him to remember that he is in the hands of experts who do this work day in and day out. Whenever he finds himself becoming upset, Jack is instructed to take a deep breath and recall the place of comfort that he imagined in the first session. Encouraged to see himself turning over the work of the surgery to the experts, Jack is told that he will find it easy to void and to follow the suggestions of the nurses as they help him with ambulation and recovery. Finally, Jack practices several analgesic techniques for his use with pain control after the surgery.

25.5.1.4. Treatment outcome

A note from Jack indicated that he experienced the surgery quite well. Just prior to the operation, he wrote a note of apology to his son. In addition to addressing the specific event, Jack was very open about his awareness of the distance that he has kept from people and his wish to make a change in that. He thanked his son for his offer of support and said that his doctor and he agreed that a rehabilitation facility would provide the

best post-surgical care. Jack's son called prior to the surgery and thanked his father for the note. He also visited him during his hospital stay.

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CHAPTER 26

Hypnosis in the treatment of conversion and somatization disorders

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26.1. Domain of the problem

Conversion disorder (CD) refers to the presence of deficits affecting the voluntary motor or sensory functions. These symptoms suggest neurological or other organic causes, but are believed to be associated with psychological stressors (American Psychiatric Association, 1994). Conversion and somatization symptoms were initially described in the context of hysteria, and have always been subject to debate and conceptual confusion. That this debate is still alive is reflected in the manner in which the disorder is currently classified within the two major current nosologies: in the DSM-IV (American Psychiatric Association, 1994) CD is a type of somatoform disorder; In the ICD-10 (World Health Organization, 1992) it is a dissociative disorder. For convenience, we follow the DSM-IV criteria, although in our theoretical review we present arguments for a dissociative classification.

Neurological symptoms for which no adequate physiological explanation can be found can be subsumed not only under the diagnosis of CD, but also under the diagnosis of somatization disorder (SD). Aside from differences in symptom numbers and illness chronicity, the available data indicate that there is little that distinguishes

CD from SD (Ron, 2001; Wade, 2001; Brown, 2004). We focus on CD, with the notion that most of the described features and treatment models apply to both CD and SD.

The presentation of conversion symptoms mimics a broad spectrum of neurological diseases. The most common conversion symptoms are motor symptoms, such as paralysis, incoordination, ataxia and tremor. The second most common symptom cluster consists of somatosensory symptoms that may involve anesthesia, blindness and sometimes deafness. Another cluster of symptoms may involve seizure-like activity. There can also be a mixed presentation in which there are motor symptoms, sensory and seizure-like symptoms.

According to the DSM-IV criteria of CD, the onset or exacerbation of these symptoms has to be associated with psychological stress or trauma. Childhood sexual, physical and emotional abuse have indeed been linked to conversion and somatization symptoms (e.g. Morrison, 1989; Betts and Boden, 1992; Alper *et al.*, 1993; Binzer and Eisemann, 1998; Kuyk *et al.*, 1999; Litwin and Cardeña, 2000; Roelofs *et al.*, 2002a; Salmon *et al.*, 2003; Brown *et al.*, 2005) Further, it is not uncommon for conversion symptoms to develop following exposure to acute stressors

(Binzer *et al.*, 1997; Roelofs *et al.*, 2005). Nevertheless, several authors have questioned the necessity of identifying psychosocial precipitants in order to make a firm diagnosis of CD or SD (e.g. Merskey, 1979; Ron, 1994). Although clear environmental precursors are often found, they can be absent in some cases (Ron, 1994; Roelofs *et al.*, 2002a).

Psychiatric co-morbidity is common in CD. Axis-1 (DSM-IV) co-morbidity, mainly of depression and anxiety disorders, is observed in 22–75 per cent of the patients (Mace and Trimble, 1996; Binzer *et al.*, 1997; Crimlisk *et al.*, 1998). Personality disorders are observed in 37–59 percent of the patients (Binzer *et al.*, 1997; Crimlisk *et al.*, 1998; Moene *et al.*, 2001; Roelofs *et al.*, 2002b). In some of these studies, histrionic personality disorders have been observed, but other types of disorders such as dependent personality disorder are far more common. The co-morbidity rates of neurological disorders largely depend on the treatment setting. Whereas approximately 50 percent of the patients in neurological settings show neurological co-morbidity (Marsden, 1986; Factor *et al.*, 1995), only 3 percent of the patients in psychiatric settings were identified to have additional neurological disorders (Roy, 1979).

Despite the difficulties of excluding neurological disease and malingering, CD can be diagnosed with a fair amount of reliability provided standard diagnostic protocols are carefully followed (e.g. Crimlisk *et al.*, 1998; Halligan *et al.*, 2001). This view was recently supported by two neurophysiological studies showing differential neurophysiological correlates for CD and malingering in cases of sensory (Lorenz *et al.*, 1998) and motor loss (Spence *et al.*, 2000), respectively.

26.2. Theoretical models

Despite the variety of manifestations of conversion symptoms, the symptoms share one important feature, i.e. the CD patient's symptom presentation is observably altered by environmental and social influences, yet the patient remains unaware of it. There appears to be a disconnection between conscious experience or knowledge and implicit automatic or procedural knowledge (Kihlstrom, 1992). For example, Bryant and McConkey (1989) showed that

patients with conversion blindness could modify their behavior in response to visual information they deny seeing. Yet they remain oblivious to this strategy. Sackheim *et al.* (1979) proposed that hysterically blind patients performed differently on a visual task depending on whether or not the visual task was presented as a test for blindness. In a clinical setting, we observed a patient who claimed to have no visual awareness of his immediate environment, but who was reasonably able to maneuver through an examination room without bumping into the furniture. In the case of conversion paralysis, a conversion patient is unable to move one or more parts of the body intentionally. Under less controlled or intentional circumstances such as during sleep (Lauerma, 1993) or hypnosis (Moene *et al.*, 1998) the patient may, however, show some movement with the affected area. Ziv *et al.* (1998) clearly demonstrated this phenomenon by testing the involuntary extension of an affected leg when voluntarily flexing the contralateral (normal functioning) leg against resistance. Compared with healthy controls and patients with neurological weakness, patients with conversion paralysis showed significantly more involuntary than voluntarily limb contractions with the affected limb. These discrepancies between explicit (voluntary) and implicit (involuntary) motor as well as sensory functions have raised a lot of confusion in clinical practice. The question of what accounts for these contradictory phenomena has intrigued and preoccupied philosophers, psychiatrists and neurologists throughout history.

26.3. Explanatory constructs

To describe the cognitive and emotional shifts observed with CD patients, we focus here on dissociative explanations. The basic assumption of dissociation theory is that under the influence of psychological stress, dissociation can occur between higher level explicit information processing and lower level implicit information processing, in which the explicit information processes fail (Janet, 1907). According to this theory, the apparent contradictions in symptom presentation in the previously mentioned example of conversion blindness where the patient

was able to move around the furniture adequately may be explained by the assumption that, whereas explicit conscious visual information processing fails, the visual stimuli are still being processed on a lower, implicit level (Kihlstrom, 1992). Dissociation theory of CD dates back to Janet (1859–1947), who attributed this functional dissociation of higher and lower level information processing to an attentional narrowing in response to stress, and regarded it as a form of hypnosis. Janet (1925) argued that there is a relationship between childhood traumatization and dissociative symptoms that is mediated by a process in which the traumatized individual uses his or her innate hypnotic capacities to induce self-hypnosis as a defensive response to overwhelming traumatic events (Bliss, 1984; Putnam, 1989).

In line with Janet, contemporary researchers such as Hilgard (1977), Bliss (1984), Nehmia (1991), Kihlstrom (1992) and Oakley (1999a,b) have also argued that conversion symptoms may result from spontaneous self-hypnosis involving a dissociation of sensory or motor functions. Kihlstrom (1992) made an explicit modification of Janet's dissociation model. Although both theories share many features, in contrast to Janet, Kihlstrom regards dissociation as a nonpathological 'normal' psychological process. In his model, the term dissociation is used descriptively rather than mechanistically, and traumatic experiences are no longer incorporated as a causal factor in the development of dissociative symptoms. The most important assumptions and empirical evidence of modern dissociation models, such as Kihlstrom's model, are outlined below.

Several neurophysiological and neuropsychological studies support the view that higher level motor and sensory control functions are disturbed in CD while lower level control functions remain intact. For example, two event-related potential (ERP) single case studies showed intact early sensory processing accompanied by an altered P300 (potential associated with awareness) in conversion patients with motor (Lorenz *et al.*, 1998) and sensory (Fukuda *et al.*, 1996) symptoms, respectively. Also, a single case positron emission tomography (PET) study by Marshall *et al.* (1997) showed that when a patient with unilateral conversion paralysis of the left

leg attempted to move her affected leg, there was no activation of the right primary motor cortex (M1), but there was increased activation in two prefrontal inhibitory structures, the right anterior cingulate (ACC) and orbitofrontal cortex (OFC). The authors concluded that the ACC and the OFC inhibited the prefrontal (willed) effects on the right M1 when the patient deliberately attempted to move her affected left leg.

Similar brain structures were involved in a case of sensory conversion symptoms (Tiuhonen *et al.*, 1995). Also recent motor imagery and motor priming studies (Roelofs *et al.*, 2001, 2002c, 2003, 2006; De Lange *et al.*, 2007) showed conversion paralysis to be associated with impaired higher level motor control and relatively intact lower level motor control. In short, there is good evidence from recent neurophysiological and neuropsychological studies that CD is concomitant with dissociated higher level and lower level control processes.

Like Janet, contemporary authors such as Kihlstrom (1992) and Oakley (1999a,b) note the similarity of CD symptoms and the dissociative aspects of hypnosis. Recent neuroimaging studies provide some support for the suggested overlap between hypnotically suggested phenomena and conversion symptoms. A single case PET study showed hypnotically suggested paralysis (Halligan *et al.*, 2000) to involve the same frontal inhibitory structures (OFC and ACC) as those identified in the above-mentioned case of conversion paralysis (Marshall *et al.*, 1997). Also, using mental hand rotation tasks, Roelofs *et al.* (2002d) found hypnotic paralysis to result in impairments similar to those previously observed in patients with conversion paralysis (Roelofs *et al.*, 2001). Moreover, the parallel between conversion symptoms and hypnotic phenomena is supported by the fact that many conversion symptoms have a hypnotic counterpart, and CD is often accompanied by elevated levels of hypnotic suggestibility (Janet, 1907; Ludwig, 1972; Bendefeldt *et al.*, 1976; Bliss, 1984; Roelofs *et al.*, 2002b). The fact that there are many similarities between the symptoms of CD and hypnotic phenomena has long been recognized in clinical practice. The shared characteristics are a lack of concern regarding the symptoms, a feeling of involuntariness, the influence of motivation and social factors, as well as the display of implicit processing.

Oakley (1999a) states that several characteristics underlying conversion symptoms and hypnotic phenomena are similar and clearly related to the difference between implicit versus explicit perception (i.e. awareness) or knowledge (i.e. consciousness). In his model of self-awareness and consciousness, Oakley distinguishes a higher level self-awareness system and a lower level semi-autonomic executive control system (see also Norman and Shallice, 1986). Oakley contends that most of our actions and thoughts are processed within the lower level executive control system, without subjective awareness. This executive system can be directly influenced by both internal factors (i.e. self-suggestion, conflict, motivation) and external factors (i.e. heterosuggestion, social or psychological pressure, expectations) and can in turn produce both hypnotic and conversion symptoms. This explains the CD patient's *la belle indifférence* and dearth of explicit knowledge: patients have *implicit knowledge* of how to move their legs but have no explicit knowledge of this skill, which also explains why they are so unusually indifferent to their plight.

In his model, Oakley regards motor conversion symptoms as the result of the inhibition of wilful movement by the central executive structure. More recently, Brown (2004) has developed a more integrated cognitive model putting more emphasis on the development and content of symptom-related mental representations that are selected by the central executive control mechanisms. Following the cognitive-behavioral tradition, Brown describes putative precipitative (antecedents), moderating (maintaining) and consequential (reinforcing) factors in CD and SD. In the model, autosuggestions or heterosuggestions form only one of the possible precipitating factors that may form the basis for symptom-related cognitive representations. Other factors are sensorimotor experiences associated with physical illness and traumatic events, indirect exposure to physical states in others and socio-cultural transmission of information about health and illness. As far as moderating factors in Brown's model, attentional processes such as the recurrent reallocation of attention onto symptoms by the central executive control system is the primary pathogenic factor in the development of symptom chronicity.

An important example is self-focused attention that may lead to increased awareness of bodily sensations and enhanced reports of bodily symptoms. Other examples of moderating factors are illness worry or behavioral responses such as seeking reassurance.

To summarize, dissociation theory has recently been placed in a broader cognitive-behavioral perspective within current hierarchical cognitive theories (Oakley, 1999a,b; Brown, 2004). Although Oakley regards CD primarily as an autosuggestive disorder, Brown recognizes more factors that may affect conversion and somatization symptoms. It should also be noted that patients with CD do not show the expected elevated scores on measures of dissociation such as the Dissociative Experiences Scale (DES; Bernstein and Putnam, 1986; Roelofs *et al.*, 2001). Authors such as Oakley (1999a,b) and Brown (2004) propose that the construct dissociation is not necessary require a meaningful link between conversion symptoms and hypnotic phenomena. Despite these drawbacks of dissociation theory, the view that CD is characterized by dissociation between lower level and higher level control processes is widely accepted and supported by extensive empirical evidence.

26.4. Clinical applications

Given the many parallels between hypnotic and conversion phenomena, hypnosis may provide a fruitful context for the treatment of CD.

26.4.1. A review of the research literature

The use of hypnosis as a form of treatment for CD has been extensively described in numerous single case studies and some case series (Janet, 1907; Wilkins and Field, 1968; Kroger and Fezler, 1976; Spiegel and Spiegel, 1978; Sackheim *et al.*, 1979; Patterson, 1980; Conrad, 1985). Oakley (2001) reviewed 12 single case studies, mostly speech disturbances and motor symptoms, in which hypnotic procedures were successfully used in the treatment of CD. Interestingly, as well as employing hypnotic procedures, most studies used a number of adjunctive techniques and strategies such as cognitive-behavioral techniques, speech therapy

and face-saving strategies. Indeed, most professional hypnosis societies consider hypnosis as an adjunctive technique to be used in support of a broad-based treatment approaches, such as cognitive-behavioral, psychodynamic and rehabilitation therapies.

Many authors recommend a comprehensive, eclectic or multimodal treatment approach. In line with this idea, Wade (2001) used qualitative criteria to evaluate the therapy effectiveness of a selection of multiple case studies of CD patients as well as a broader field of patients with Somatization Disorder (SD), and concluded that a multidisciplinary rehabilitation approach with several simultaneous interventions may be most successful. This conclusion is in agreement with current forms of cognitive theories like the earlier mentioned hierarchical cognitive theory of Oakley (1999b) and the integrative conceptual model of unexplained illness based on cognitive psychological principles by Brown (2004). Brown argues that the treatment of choice depends on a detailed assessment of the patient's symptoms, the factors associated with their onset and maintenance. He goes on to say that it can involve cognitive-behavioral therapy, suggestive therapy with or without hypnosis, psychodynamically-oriented therapy, and occupational therapy or physiotherapy.

Two studies by Hoogduin and Van Dyck (1992) and Moene *et al.* (1998) used such forms of eclectic therapy. In the study by Hoogduin and Van Dyck, eight inpatients with CD received hypnosis-based treatment and physical revalidation. At follow-up (6–72 months post-treatment), three patients had completely recovered and five had improved considerably (with one of the five showing a short relapse). In Moene *et al.* (1998) the authors describe a pilot study consisting of eight consecutive CD patients. All patients had been diagnosed with CD for many years. The mean duration of treatment for this clinical trial was 2 months as an inpatient and 20 sessions as an outpatient. One patient dropped out and seven completed treatment with symptom removal. Three patients relapsed during follow-up.

Controlled studies on the treatment of CD are scarce and, until recently, there were none available controlling for natural changes that may

occur without intervention. Controlled single case studies have shown cognitive-behavioral, operant, cue conditioning and symptom-focused approaches to be promising (Agras *et al.*, 1969; Hersen *et al.*, 1972; Ohno *et al.*, 1974; Kallman *et al.*, 1975; Turner and Hersen, 1975). However, controlled clinical trials providing information on the successful treatment of long-standing CDs and follow-up information are very few in number (Munford and Paz, 1978; Montgomery and Espie, 1986; Kop *et al.*, 1992). To our knowledge there are only two randomized controlled group studies on the treatment of CD and SD. They followed an eclectic approach including hypnotic techniques involving both inpatients (Moene *et al.*, 2002) and outpatients with CD (Moene *et al.*, 2003b).

In the Moene *et al.* (2002) study, the investigators treated 45 adult inpatients with CD of the motor type, or SD with motor conversion symptoms, using a comprehensive 2-month treatment program. All patients participated in group therapy aimed at increasing the patients' problem-solving capacity using behavioral and cognitive techniques. In addition to the group therapy, the patients followed an individual symptom-directed program consisting of physiotherapy, individual exercise sessions and bed rest. A total of 24 patients received additional hypnotic treatment with 8 weekly 1-h sessions using symptom-oriented and exploratory techniques. The control group of 21 patients received an additional treatment without specific interventions for conversion symptoms. For patients who completed follow-up, the mean time as an inpatient was 2.9 months. For the total sample, significant treatment results were found on all outcomes measuring symptom reduction and reduction of impairments in the domains of physical activities, activities of daily life and social activities. At a 6-month follow-up, the improvement was maintained and even increased across all outcome measures. Use of hypnosis appeared to yield no additional benefit.

The second randomized controlled clinical trial involved 44 outpatients. Moene *et al.* (2003b) found that patients with conversion symptoms who had completed a 10-week hypnosis-based therapy protocol (symptom-oriented and exploratory techniques) significantly improved relative to baseline. Their improvement exceeded

that of a wait-list condition and was maintained at 6-month follow-up. Twelve patients were referred for further treatment sessions beyond the 10-week post-treatment assessment with a mean number of 6.3 extra sessions.

The findings from these trials suggest that hypnosis-based interventions are efficacious for patients with conversion symptoms. Nevertheless, the hypnotic techniques appeared not to add significantly to the efficacy of the eclectic, inpatient treatment program. Also, in both studies hypnotizability was not found to contribute specifically to treatment outcome. However, the effect sizes of the hypnotizability/outcome correlation ranged from 0.25 to 0.35. This is a typical effect size for the association between patient variables and psychotherapy outcome (Garfield, 1994).

In the case presentation section of this chapter, the eclectic approach used by Moene *et al.* (2002, 2003*b*) will be described and illustrated in more detail. The various hypnotic techniques that are used in this approach are described immediately below.

26.4.2. Hypnotic techniques in CD

There are no studies specifically examining the effectiveness of various hypnotic strategies or techniques for the treatment of specific CD symptom categories such as paralysis or aphonia. Nevertheless, the literature describes two kinds of hypnotic procedures: symptom-focused and exploratory techniques. The symptom-focused strategies involve the aforementioned predominantly cognitive-behavioral, symptom-oriented approaches, as well as the direct and indirect influencing of symptoms by operant conditioning techniques and cue conditioning. In these strategies, hypnosis is used formally or in a *hypnotic context*.

Exploratory techniques such as revivification or age regression refer to insight-oriented and expression-oriented psychotherapeutic techniques. They are used to explore emotions that are associated with the symptoms or their onset. It is suggested to the patient that giving expression to the pent-up or dissociated emotions and dealing with them both during hypnosis and in the waking state may positively influence the symptoms. In both the symptom-oriented and exploratory hypnotic approaches, direct, indirect

and post-hypnotic suggestions of symptom reduction are used. Some authors stress the importance of learning self-hypnosis. Indeed there is some evidence that home practice of hypnotic relaxation may be a therapeutically significant aspect of symptom reduction strategies (Spinhoven, 1989).

26.5. Symptom-oriented techniques

In this section several symptom-oriented techniques will be described and illustrated for the main symptom complexes: motor, sensory and pseudo-seizures or convulsions (pseudo-epilepsy; PES), followed by a general description of explorative techniques.

26.5.1. Motor symptoms such as paralysis, contractures and uncontrollable movements

26.5.1.1. Making use of the present rest capacity with flaccid paralysis

In cases of paralysis, suggestions are for the patient to pay attention to any kinetic reactions he/she may be having in the affected limb (e.g. tingling, pain, and differences in temperature or tiny muscular spasms in the affected limb). These sensations can be strengthened by suggestive reinforcement such as ‘the longer you concentrate on the tiny muscle spasms, the stronger they will become’. As sensations begin to strengthen, we move to suggestions for small muscle movements followed by larger muscle movements. Emphasizing and praising every occurrence of little (spontaneous) movements is important.

26.5.1.2. The nonaffected limb helps the affected one

In this intervention (Hoogduin *et al.*, 1993) the patient is asked to concentrate on the nonaffected limb, to become aware of the sensations that are present in the limb, to name them and to visualize them. The therapist then gives the suggestion that the affected body part has *forgotten or unlearned* how to feel the sensory perception and physical sensation, and that the nonaffected limb is going to re-train the affected one. Thereafter, suggestions follow that certain

movements and motor sensations can flow from the healthy area to the affected body part so that the patient can also experience it there. (For an illustration, see Section 26.9, case 1.)

26.5.1.3. Relaxation and imagination

Also for symptoms of hand contraction, hypnotic suggestion can be used to influence the symptoms and enlarge subjective feelings of control. The hypnotic suggestion involves relaxation of the arm and hand muscles together with presentation of the image of a balloon being blown up in order to get the hand with the contracted fist to open and close by itself (Hoogduin *et al.*, 1993).

26.5.1.4. Imagination of normal functioning in the past

With this technique, while under hypnosis the patient goes back to the time when voluntary movement still functioned. Moene and Rümke (2004) used this technique with a young woman who had paralysis of a hand.

Illustration: After hypnotic induction, Joan went back to thoughts of a lakeshore at the campgrounds where she always felt very happy. Then the suggestion was given for her affected hand to pick up stones and let them slide away. Along with this, the suggestion that she also experience this with increasingly more sensory perception was given, and also that she should feel the precise tension in her hand muscles that was necessary to pick up the stones. After this, other different images were used, such as feeling the sand in her hand and making sand drawings with her hand in combination with suggestions of increasing muscle strength, sensory feeling and recovery of movement.

A comparable approach for patients with aphonia is from Drost (1996), who used this technique diagnostically and therapeutically in an informal *hypnotic context* to demonstrate the functional character of speech disturbances by letting patients go back to a pleasant experience in time when speech was still normal. During hypnosis, the therapist suggests that the patient begin talking about the pleasant situation whereby the voice can 'relearn' the skills to talk again.

26.5.1.5. Making use of the fact that during sleep, the symptoms are absent

This technique is mostly applied for tremors or pseudo-ataxia. Here the clinician makes use of

the fact that many CD symptoms abate during sleep (Hoogduin and Van Dyck, 1990). The treatment is built up step-by-step. First, while in hypnosis, the patient is asked to lie down in a sleeping position and to try to sleep. Next the therapist gives suggestions for rest and muscle relaxation. Finally, the explanation is given to the patient, who is in a state of deep relaxation, to imagine that he has reached the mental state that is comparable with the sleep whereby the symptoms will abate. Eventually the same sequence is followed but with the patient in an upright (i.e. sitting) position. The following sessions might include suggestions that the patient falls asleep with open eyes, while remaining relaxed. The patient is taught how to do self-hypnosis and instructed to practice the exercises at home.

26.5.1.6. Catalepsy induction

This technique (developed by Sacerdote, 1970, and termed *reverse hand levitation*), can be used when the patient has no control over his or her muscular movements or in the presence of tremors or pseudo-ataxia (Erickson, 1980; Hoogduin and Van Dyck, 1990).

The method is as follows: the patient sits in a chair with elbows supported on the armrests. The therapist takes the wrist between thumb and index finger and lifts the lower arm to a vertical position. By now changing the support of the arm and letting it loose again, gradually a situation of catalepsy, or a transformable stiffness or wax-like malleability is suggested and sustained by the CD patient. The catalepsy can again be applied in different extremities or in the torso in the same manner. A complete body catalepsy is stimulated for patients who have trouble with uncontrollable movements in their whole body. The patient first practices with catalepsy of a limb and, when that is successful, the suggestion is given that this experience (the feeling and the actual perception of stiffness) can generalize through the whole body. Another method is to make the opposite movement alternately with the body until it feels frozen or stiff (for an illustration, see Section 26.10, case 2).

In a number of cases there is a so-called *rebound* effect, a temporary return of the tremors or uncontrollable movements after the catalepsy has subsided. It would be prudent to anticipate

this phenomenon in the treatment so that a patient does not become anxious or disheartened when it occurs. Experience has taught that with longer duration of control over the movements, the rebound effect gradually diminishes. In order to influence this, one can use post-hypnotic suggestion to support the notion that the relief from tremor will remain increasingly longer.

26.5.1.7. Letting go

Another applicable method for shaking and tremors is *letting go*. Many patients try to resist the uncontrollable movements by tensing their muscles. The effect of this strategy is often *more* movement, not less. In many cases, explanation of this unwilling effect, in combination with the prescribed rest periods and *letting go* of the resistance, can be the solution to the problem. Progressive relaxation with or without hypnosis can enable the patient to *let go* of the resistance and thus gain an element of control. During hypnotic relaxation, the patient can be given the suggestion not to resist the movements, to shake them off, and to make the body heavy and languid, whereby the movements will become increasingly slower and eventually shall stop.

In complicated situations, *cue conditioning* for distraction of the attention can be a supportive technique. It is sometimes almost impossible for patients who shake to direct attention on their exercises or to breath normally.

Illustration: Mr van Zuid has a shaking leg. While administering a local stimulus on his arm for approximately 15 s, he receives the instruction to focus his attention fully on the area where the stimulus is given and to combine this with deep *stomach breathing*, whereby he utters the word 'loose' while exhaling. The letter 's' from the word is pronounced until the end of the exhalation: stimulus inhaling exhaling loosse The next stimulus is only given when the shaking increases again.

26.5.2. Somatosensory symptoms (e.g. anesthesia, tunnel vision or blindness and deafness)

Sensory disorders often accompany CD, but seldom endure. With recovery from the disorder, recovery of sensations usually occurs.

The therapist can offer this suggestion as support or the suggestion that sensations are the beginning of recovery from the symptoms. The assertive re-appearance of total loss, or the change in function of sight or hearing during certain periods of time is less prevalent than with motor conversion symptoms.

26.5.2.1. Making use of visual and auditory imagination in conversion blindness or deafness

In order to support the patient's motivation, it is important that the therapist starts with pleasant and familiar images, sounds or objects. The patient receives the suggestion to call upon these while going into a deeply relaxing state during certain times of the day. Thereafter, the suggestion is given that 'it is precisely from this positive and relaxed state of mind, that *consciously* learning to see and hear will be facilitated, and that one day it will manifest itself, initially just a bit, but after that, there will be more and more conscious awareness of images or sounds during longer periods of time'. De Haan and Bergsma (2002) describe the use of rest capacity in the treatment of a young woman with conversion blindness. She initially learns to visualize. After inducing hypnosis, she has to stare at an object in the therapy room, and then to visualize it with her eyes closed. When this is achieved, she receives the task of staring at objects for certain periods during the hours that she is not blind at home, and then to visualize them while hypnotized during the hours of the day that she is blind. Furthermore, she receives the suggestion that she must wait until her eyes are at the point when she no longer precisely knows if she is visualizing or actually seeing the object. In our experience, when a patient begins to voice this type of confusion, restoration of function is close at hand.

Illustration: Paul, age 19, has a partial loss of vision. He sees differences in color, but nothing more. This improves at certain times of the day, and he is somewhat able to perceive, albeit vaguely, what his surroundings look like. The therapist uses this for treating the complaints. The patient receives visualization exercises with the task of *playing* with the colors, to intensify and minimize them, as well as making the color areas larger and smaller. He must

perform this exercise daily and register the results. Even though he faithfully practices, he doesn't really progress. There is approximately a 30 per cent improvement. Psychologically, things continue to improve for him. The conditions for recovery surely appear to be present through this. Before release, he goes to see his ophthalmologist who reports that his condition is satisfyingly improving, and prescribes vitamin B. The therapist realizes that Paul wants to relinquish his symptoms without *loss of face*. She gives Paul the powerful suggestion that the complaints will completely disappear because things are going so well right now. She also mentions that the ophthalmologist sees the situation positively. Three months later when sitting in the waiting room, Paul sees the therapist and says that she really looks exactly as he had imagined she would. His vision seems to have completely returned.

26.5.3. Seizures or convulsions

26.5.3.1. Hypnotic self-control procedures

Kuyk *et al.* (1999) used hypnosis for the identification of PES and showed that hypnotic recovery of memory of the events occurring during a seizure was only possible in the case of pseudo-seizures and not in real seizures. This technique is called *hypnotic recall* and it can also be used therapeutically to explore the mental state of the patient during a pseudo-seizure. It may also help to enhance control over symptom-eliciting stimuli and the pseudo-epileptic attacks themselves. The patient is told that such attacks are the result of increasing tension in the body from long-lasting strain, acute stress or threat without there being an electrical release in the brain. The release of tension takes place in the muscles. Usually with this, one shifts into another state of consciousness. Then it is explained that hypnosis is a state of mind wherein one can enter into this changed state of consciousness, before as well as during the attack (Moene, 1991; Moene *et al.*, 2003a). The patient is administered a hypnotic procedure and is asked to think back about the beginning of the last attack. Evocation of this experience is done as vividly as possible by asking about (and intensifying) the sensory as well as the emotional experiences. When it is clear which tension-eliciting situations or experiences the patient reacts to, other attacks can also be charted in this way.

Through this, the patient and the therapist get an image of situational triggers that immediately precede the attacks. The patient can decrease the burgeoning tension and can learn to resist the attacks by practicing with antagonistic reactions during hypnosis and in a waking state. An example of such a method is cue conditioning.

Illustration: Mrs James and cue conditioning. A tingling sensation is the first warning that an attack is underway. In hypnosis, Mrs James learns to relax quickly. When she feels the tingling sensation, she stops doing whatever she is doing, she goes into a quick trance by thinking of her relax-chair which is a synonym for deep relaxation and rest; she then takes a deep breath, holds it for a few seconds, breathes out and lets all tension leave her body.

26.5.3.2. Provoking attacks: prescribing the symptom as a self-control procedure

This approach is indicated in cases where the occurrences of attacks are strongly determined by anticipatory anxiety (Hoogduin *et al.*, 1996). The relationship between anxiety and the attack is explained to the patient. During hypnosis, the patient is given suggestions vividly to re-live one of the more recently occurring attacks and to describe the antecedent situation. Then, still during hypnosis, an attack is induced by deliberately using these situational triggers with attendant anxiety. As the symptoms eventually recede, the therapist emphasizes that if the patient can 'turn on' the attacks by becoming anxious, he/she can learn to control them by becoming relaxed in the face of the situational triggers. As this process of elicitation and recovery is repeated, the patient learns how to elicit and terminate the attack. The final goal is that the patient learns to avoid attacks by becoming more conscious of the antecedent events and/or by interrupting the anxiety before it escalates.

Illustration: During hypnosis, John King, a 36-year-old man, goes back in time to the moments before the last attack. The therapist asks him to concentrate on the first signals, and he intensifies them by repeating them. The attack then begins, and the therapist describes what happens: 'I see your arms spasm, your breathing speeds up, you now begin to shake your legs too. It's going well, and now we're going to help you get out of the attack. You will first notice that your breathing will calm down and your

arms will feel heavier. This is the first sign that your body will feel more relaxed, calmer and heavier’.

Every change in the appearance of John’s situation is noted and is coupled to the suggestions that the relaxation will increase and that this is a sign that he is returning to normal consciousness. The exercise is discussed after hypnosis is terminated. The patient is complimented for his boldness and accomplishment.

Then a brief form of exercise program is discussed and practiced with him. The core of this program is that the patient goes increasingly deeper into hypnosis and purposefully imagines the cues that precede an attack. Then, with self-suggestions of relaxation, heaviness, and calm breathing he counter-conditions the cues.

26.6. Expressive techniques

Expressive techniques, focused on the emotional experiencing of trauma or conflict, may be helpful in achieving clinical improvement. However, they should be applied with great care and should never be focused on the literal recovery of lost memories given the danger for iatrogenic suggestion during therapy (Brewin, 2003; McNally, 2003). If expressive techniques are used with trauma patients, this has to be integrated in a therapeutic context in which trauma-related problems are carefully treated. This may be particularly important for patients with pseudo-epileptic attacks, because several authors emphasize the role of sexual abuse in the etiology of PES (Betts and Boden, 1992; Bowman, 1993; Bowman and Markand, 1995).

26.6.1. Revivification and/or age regression

These techniques can be used in cases where the symptom onset is associated with a specific distressing experience. The patient returns to thoughts of pertinent occurrences or to the initial period of the CD whereby the suggestion is given that the ability to express the emotional experiences of the past will positively influence the symptoms.

Illustration: Mary, a 41-year-old woman, has had total paralysis and numbness in her right leg for 4 years. She is aware of her incest history, confirmed through a third party. Symptom-oriented techniques

are not successful in restoring movement to her leg, possibly because of the absence of any sensations. Use of an exploratory technique is then considered. Mary has reported a traumatic experience wherein the offender abused her such that he so forcefully pushed her right leg against the wall that, after initially feeling much pain, she then experienced her leg as completely numb and nonexistent. During a hypnosis session, she recounts this experience, which makes her anxious. The therapist reassures her and offers a plausible rationale that he therapeutically uses, namely that her leg surely was there and still belongs there, but that she didn’t feel her leg because it was repressed for a long time. Further, she is asked what she would have preferred to do with that leg. When she reveals that she would have wanted to kick the offender away, the therapist decides to use this wish in order to awaken the paralyzed leg with its first movement. Mary receives the suggestion to make a strong kick with the nonparalyzed leg and to allow the symbolic expression of resistance flow to the paralyzed leg through which it too will be able to move again. Contractions of small and large muscles in the affected leg are then observed.

Brady and Lind (1987) describe an example of a similar technique in a case of hysterical blindness. A young man is blinded after a fire in the house where he grew up, where his sister was seriously wounded. During the hypnosis, he reveals that he blames himself for first thinking of himself and escaping from the house, going back later to rescue his sister who had already been rescued by the fire department. After this is clarified, the suggestion is given that this inner conflict should be discussed in psychotherapy and his vision can recover.

26.7. Complications arising during treatment with hypnosis

It is important that therapists are aware of the fact that during all phases of the hypnotherapeutic treatment for CD, unexpected phenomena and patient responses can arise. Usually these reactions are described as idiosyncratic responses to hypnotic suggestions (e.g. the raising of both arms when suggestions for unilateral arm levitation is given). For clinical practice the

fact that these effects sometimes occur must be accepted. It must be understood, however, that when 'something odd' happens, it can often be woven into the intervention so as to support the therapeutic work. Moene and Hoogduin (1999) offer detailed guidelines as to how to accommodate these phenomena and utilize them in a positive and creative way. They describe a patient who has a generalized reaction to hand levitation. Their main message to the patient is that what appears to be an initial worsening or transformation of symptoms with hypnosis is really an opportunity for the patient to enhance control over the presentation of symptoms and improve the understanding of them.

Illustration: Mrs D., with a hypnotizability score of 4 out of 5 [Stanford Hypnotic Clinical Scale (SHCS) Morgan and Hilgard, 1974] is treated for a paresis of the left leg. In the course of the treatment she is given instructions for hand levitation to which she responds positively. It is then suggested to her that because her arm has successfully and adequately responded, hypnosis might be the indicated method to learn how better to control body movements. Shortly afterwards the therapist sees her raising both legs spontaneously. The therapist decides to use this unexpected response. She tells Mrs D. that she must be a very talented hypnotic subject to be able to use so quickly what she has just learned, and she indicates that this could well mean that the recovery from the paresis will take place faster than initially expected. After this, the therapist gives Mrs D. suggestions about a further increase of the upward movement. She is then urged to concentrate intensely on the sensations in her paralyzed leg and become aware of these sensations to break through the blockage of sensation in this leg. Following suggestions of heaviness, formal hypnosis is ended. Further hypnotherapeutic sessions focus attention on feeling sensations and muscle contractions in the paralyzed leg.

26.8. The structure of the case illustrations

The hypnotic techniques described in the previous sections are seldom employed on their own in the treatment of CD and SD. In our view, a hypnotic intervention acquires its therapeutic

impact to the degree that it is embedded in a comprehensive and well-articulated therapeutic frame. Before we describe in detail the hypnotic strategies used with two CD patients, we first set the stage with a brief description of the therapeutic context in which these strategies were used at the psychiatric Hospital De Grote Rivieren in Dordrecht (The Netherlands) (for a fuller description, see Moene *et al.*, 1998); Moene and Rümke, 2004).

26.8.1. The treatment model: a brief outline

Given the psychosomatic nature of CD and SD, both the assessment and treatment phases are carried out with the close co-operation of psychotherapists and physiologists. This enables a combination of psychological interventions and physical rehabilitation, which is of particular importance in the case of chronic motor symptoms.

26.8.1.1. Assessment phase

1. Somatic/neurological screening to rule out organic disorder.
2. Behavioral analysis by a psychotherapist: identification of predisposing, precipitating and perpetuating factors that triggered the onset of the symptoms (e.g. history of physical illness, life events); assessing psychiatric co-morbidity and investigation of relevant topics such as the patient's own theories regarding the cause of the symptoms and involvement in insurance or juridical procedures.
3. Examination by a physiotherapist (including EMG assessments) wherein the symptoms and the consequential physical limitations are inventoried. The motor skills and limitations, the physical burden and the necessary help with activities of daily life are charted.

26.8.1.2. Consultation

The patient and his family are offered a plausible rationale to explain the symptoms and the treatment model presented. It is important that the rationale squares with the patient's subjective experiences and his belief system, and that the treatment is received by the patient as logical.

26.8.1.3. Treatment phases

1. Psychotherapy (individual and/or systemic) focused on the precipitation, the maintenance and the consequential factors of the disorder. Cognitive-behavioral interventions are also directly focused on the symptoms.
2. Hypnosis that is symptom oriented or/and expressive. In order to make successful use of hypnosis, the patient must be hypnotizable, and have the ability to concentrate on sensory as well as the motor experience. Motivation is also required. It is important to explain the use of hypnosis and to discuss any lingering concerns. For this, the earlier mentioned facts about the relationship between hypnosis and CD are used.
3. Individual physiotherapy for training of the lost, reduced or altered physical functions and counteracting the possible secondary physiological consequences of long-standing CD, such as muscular atrophy, pain or poor blood circulation.
4. Group therapy aimed at improving the patient's problem-solving techniques and social skills training to prepare patients for returning to normal social interactions without the symptoms.

26.9. Case 1. A symptomatic approach using hypnotic imagery and behavioral methods

Mrs Jones, a 46-year-old married woman with three children ages 21, 19 and 15 has conversion paralysis in both legs and the left arm, diagnosed as conversion symptoms in the context of a somatization disorder. She uses an electric wheelchair in order to move around. From her youth on, Mrs Jones experienced multiple physical complaints such as chronic fatigue, loss of muscle strength, difficulty standing and walking, paresis of the left arm, aphonia and double vision, all of which cannot be properly explained by medical examinations. She reports that she had been exposed to physical threats and explosive outbursts of anger from her father for years

and that he had sexually abused her once. Third parties confirm this.

Mrs Jones had her first two children soon after getting married. She was unhappy because it was necessary for her to work in the family business. Over the years, Mrs Jones consulted many physicians and specialists for her physical complaints. She received many explanations. She says that this made her feel very insecure. When she was 33 years old, her motor problems started. First, there was loss of strength in the left arm, and later paralysis of the same arm and of both legs. She was shocked and relieved to hear a diagnosis of multiple sclerosis during an eye examination. On the other hand, she also had her doubts about the diagnosis because her symptoms did not conform to those of multiple sclerosis patients. Her children and husband prepared themselves for having an invalid mother and wife. They shared the household tasks and received assistance from home help services.

Several antecedent and consequent factors are identified as being relevant for the treatment. As assessed by the SHCS (Morgan and Hilgard, 1974; Oyen and Spinhoven, 1983) Mrs Jones was highly hypnotizable (score of 5 on the SHCS). Further, she appeared physiologically reactive to suggestions regarding her having multiple sclerosis and past abuse by her father (see also Brown, 2004). Other noteworthy factors were her belief that the symptoms were attributable to multiple sclerosis; her fear of being stigmatized if her neighbors knew of her psychiatric treatment; and her family's reinforcing illness behavior.

The assessment team (psychotherapist, physical therapist and, in this case, the neurologist) advised the couple that: (1) the patient does not have multiple sclerosis; and (2) the hospital specializes in the type of disorder that she does have. The patient was then told she has a diagnosis of CD, a disorder that is treatable. The patient was told that if she felt she must tell neighbors something about her treatment she can say 'a dysfunctional muscle disorder was discovered that luckily can be helped with intensive training'.

If the patient is convinced that muscles and nerve paths are irrecoverably defective, then mobilizing hope is quite difficult. Hence, the

physiotherapist and the psychotherapist thoroughly explain the difference between the destruction of muscles and nerves resulting from organic injury and pathology associated with CD. Furthermore, Mrs Jones is told:

People with conversion motor symptoms have forgotten or unlearned the conscious control of body movement, but this procedural knowledge is present at an unconscious level. The fact that patients can no longer consciously execute their movements has to do with a mechanism that is called *dissociation*. This occurs when people are under a lot of stress for a long period of time, are exhausted or have had drastic or traumatic experiences. Because of this, the conscious and unconscious (automatic) functioning of our movement has split apart. The nervous system is disrupted and the patient loses the conscious control of his voluntary movements. In a way it is a little like a computer. All the hardware can be present and installed in the correct manner, but if there is no well-functioning software, it is useless. The reason we use hypnosis is that for some patients it can help re-connect them with knowledge about movement—knowledge which they have unlearned because of stress. Once this connection is made, a patient can refine their movement pattern with the help of physiotherapy.

The explanation is supported with drawings and schematic representations of the body and of the psychological processes that the patient has experienced. The therapist elaborates with examples from the patient's own history and symptom status. Finally, the therapist mentions that in case stressful or traumatic events are factors that have caused the disruption, they will be examined and dealt with in the treatment.

26.9.1. The phases of the hypnotic strategy

The first focus of the treatment with Mrs Jones is the paralysis of the left arm and the utilization of the fact that her right arm is still functioning normally. The hypnotic strategy consists of different phases:

1. Introduction of hypnosis and preliminary exercises.
2. Using the technique where the nonaffected limb teaches the affected limb.

3. Shaping of other movements of the paralyzed hand and arm.
4. Generalization of movements in normal daily life.
5. Imagination of normal functioning in the past with the paralyzed legs.

26.9.1.1. Introduction of hypnosis and preliminary exercises

Mrs Jones learns how to relax her body with a combination of suggestive and relaxing visualizations. To create a positive and hopeful therapeutic climate, during hypnosis Mrs Jones is given the suggestion that she will now learn a new form of control over her body movements, but not by the exertion of her will, because patients with CD *know* that as they *try* to move, they cannot exercise this kind of willed and conscious control over their body movements. She is told that there is another kind of control, a more unconscious, automatic control that she will learn to apply skilfully in hypnosis. And when she will be able to move her affected limb in hypnosis, she can generalize this ability to the normal waking state. Then the physiotherapist will give her a training program to help her strengthen her muscles, and learn to co-ordinate her movements so that she will be able to walk and move again. This hypnotic exercise is audiotaped and like all of the following exercises, Mrs Jones is told to practice it herself twice a day, listening to the instructions recorded on the cassette, and register how deeply involved and relaxed she feels when doing the exercise (low, medium or high).

26.9.1.2. The nonaffected to affected limb technique

The therapist uses the normal movement possibilities of the right arm and hand. The hypnotic technique called *the nonaffected limb helps the affected one* is then used in different variations. At first, arm levitation is induced with the right arm (unaffected arm). Mrs Jones is asked to open her eyes during hypnosis, to look at her arm and amaze herself that she is able to do this. Thereafter, she concentrates on the sensory and motor perceptions that are present in the nonaffected arm. She verbalizes and visualizes them. Then she receives a forceful suggestion that the

right arm's movement perceptions and the muscle tension will *flow through* from the healthy arm to the affected left arm, causing it to rise as well. The suggestion is given that she will experience this as she concentrates on the image of the affected arm making the same movement. Furthermore, all the possible physical perceptions in the paralyzed arm are suggested, stimulated and embedded in the framework of revitalizing the nerve and muscle activity. It is important that all of the perceptions that Mrs Jones reports, such as differences in temperature, stinging, tingling and muscle movements, including minuscule ones, are used by the therapist and expanded upon in order to achieve a first movement.

Mrs Jones is successful in lifting her left arm a few centimeters. Now that Mrs. Jones has witnessed the movement, the therapist gives the post-hypnotic suggestion that she can relearn all the other movements that are needed to return the control of the arm to her. After hypnosis is terminated Mrs Jones watches the videorecording of the session and sees for herself what she has achieved. Just as with all of the following steps, she is vigorously praised. Mrs Jones then shares the video with her family. In the next sessions the therapist suggests both raising the arm (suggestions that it is becoming lighter) and lowering the arm (suggestions that it is getting heavier).

26.9.1.3. Shaping of other movements of the hand and arm

Now Mrs Jones learns to make a fist and then to relax it. For this she must place her two hands next to each other on her wheelchair tray. During hypnosis, the therapist asks her to make a fist with her healthy hand, to concentrate on the perceptions of her hand and the muscle tension that is needed to make the fist. Then she is given suggestions comparable with the first exercise about the *flowing through* of movement-related perception to the paralyzed arm. She succeeds in making a fist with her paralyzed hand after practicing a few times and with encouragement from the therapist. Over a number of sessions other movements are similarly supported in the following order: moving the arms sideways, like directing an orchestra; folding her hands like as in prayer; moving her fingers by imagining that she is playing a piano;

and finally more routine daily movements. The movements are in the order of difficulty.

26.9.1.4. Further movements throughout the week

When Mrs Jones masters the movements in hypnosis, she is given the post-hypnotic suggestion that: 'You come out of trance after practicing, but the arm will stay in trance for a longer time so that the movements can be retained during 'normal' consciousness ... every time more and more easily and longer ... and that gradually only looking at the arm and imagining that it is functioning normally is sufficient to allow it to occur ... and finally the movements will feel just as normal as those of the healthy arm ...

26.9.1.5. Imagination of normal functioning in the past with the paralyzed legs

The second phase of the treatment focused on the paralysis of both legs. In this case it is difficult to use the same method as with the paralysis of the left arm, because both legs are paralyzed. First the patient must literally witness her muscles generating movement. Therefore, the physiotherapist uses a form of electro-technical application, an EMG (electromyogram) by which Mrs Jones' muscle contractions are awakened. The physiotherapist applies a local, mild and harmless electrical stimulus whereby muscle contractions are induced in one of the paralyzed legs. When the patient experiences the muscle contractions and sees them translated in an intensity graph on the display of the EMG apparatus, she is convinced that her muscles and nerve paths function well enough for her to regain control of them. It is also possible to evoke muscle contractions manually. When the physiotherapist varies the speed by which he moves the paralyzed leg of the patient, reflexive movements can be realized.

When she succeeds in independently waking the contractions, the exercises are geared towards strengthening them. Thereafter, she practices daily with tensioning, and the amount of times that she succeeds in tensing the muscle group is recorded in a graph.

Hypnosis is now used as an adjunct to the physiotherapeutic treatment. Mrs Jones is told that she can use her knowledge of her previous

experiences with hypnosis to 'get into contact with her legs' and try to *let all* the physical sensations she knows from her arms now flow to her legs. Furthermore, it is suggested that she can help the therapeutic process when she imagines her legs moving. The therapist uses the age regression technique to go back to a time when normal movement in her legs was still possible. Then she has to choose a pleasant experience from the past in which she was standing and walking. The suggestion is given that:

when you see yourself doing so, you can come closer and closer to yourself like a camera zooming in ... and become more and more aware ... of the feelings and sensations the movements give you ... and then, at a certain moment ... you yourself will be the one who is experiencing the standing and walking.

These exercises go well, but then a complication arises. There is stagnation in the physical rehabilitation program. It appears that Mrs Jones trains too intensively because she is afraid her family might think that she is not working hard enough in her therapy and that she will not be allowed to return home, but instead has to go to a rehabilitation clinic. This causes a great deal of anxiety which in turn compromises therapeutic progress. This is discussed with her to highlight the relation that exists between tension-provoking events and the worsening of her symptoms. After a family session with psychotherapist and physiotherapist in which this is discussed, Mrs Jones is reassured and she continues her training. Gradually the rehabilitation programme is expanded from single contractions in her legs and feet to complete movement patterns that are then generalized and aligned step-by-step with normal daily functioning. This last phase only begins when she has complete control over all the muscle groups in her legs.

26.9.2. Psychotherapy: discussing somatization and trauma

By way of recording complaints and keeping track of her exercise therapy results, Mrs Jones learns to see the relationship among tension-provoking experiences better in the home situation or during the treatment, and her physical reaction to tension, which includes a worsening

of her existing complaints or the introduction of new symptoms. This reaction pattern is discussed in light of the somatization in her history. Sensitivity, physical vulnerability and past traumatic experiences are the keys that frame the explanation of her somatization. During the course of this expressive work, Mrs Jones, in the presence of her husband, releases her anger about her past by burning a mock childhood house that she had constructed in creative therapy.

26.9.3. Returning to normal activities without the symptoms

A few family sessions are devoted to helping Mrs Jones re-assume her proper place in the home. Family members speak openly about their often-ambivalent feelings regarding their mother's sickness, and about the consequences it has had for them. The mere fact that Mrs. Jones is better forces family members to change routines.

26.9.4. Outcome

After 4 months of treatment, Mrs Jones is released from inpatient care. She is assigned to outpatient aftercare for 2 years. During outpatient care she develops a psychogenic aphonia in reaction to tensions with her youngest daughter. She decides to use her self-hypnosis techniques to re-establish her ability to speak clearly. She is successful. At 2-year follow-up Mrs Jones is walking regularly, sometimes with, and sometimes without, a cane.

26.10. Case 2. A combination of a symptomatic approach using catalepsy and exposure and an insight-oriented approach using revivification

26.10.1. Assessment phase

Mrs Allen is a divorced 48-year-old nurse who presents with a 3-year history of shaking and rotating movements of her head and right arm that occur in sudden episodes. She reports that these movements are out of her control.

In addition, she walks bent-over, which she associates with back and neck pain. Mrs Allen easily loses her balance and she falls on a daily basis. Furthermore, she has a noticeable speech disorder, slurring her words somewhat. Mrs Allen is either in a wheelchair or walks with the aid of a walker (zimmer frame). She can no longer perform her work and is on disability.

Two years before the appearance of the complaints, Mrs Allen discovered that her husband had been having a long-term extramarital affair, and had fathered a 15-year-old child. With this discovery, Mrs Allen's relationship with her husband worsened. For a long time during her marriage she was violently abused. Her husband would beat her around the head and shoulders. Mrs Allen was ashamed of her symptoms and gradually withdrew socially, having contact only with her brother who supported her as best he could.

Assessment revealed Mrs Allen to be a good hypnotic subject (SHCS = 4). She was hypothesized to be sensitive to the automatic activation of the cognitive and somatosensory representations associated with the traumatic events, e.g. the physical abuse by her ex-husband and his verbal threats. Other maintaining factors were her social phobic complaints and social isolation.

26.10.2. Consultation

During the consultation, Mrs Allen receives the following hypothetical but plausible rationale for her complaints:

Happily, the examination shows that your muscles and nerve paths are in good order, but your locomotion has been disrupted. Your physical movements seem to have a life of their own. You do not have full conscious control over movement any more and you are not able to calm your body down when you want to. We know that your complaints were caused during a long period in which you were under a lot of pressure because there were a lot of traumatic experiences in your relationship with your ex-husband. It was then necessary for you to protect yourself physically from him. You consciously reacted to your abuse with this *protection pattern*. You bowed down and protected your head with your right arm. Because this pattern of movement was repeated over and over again in a context of fear, this movement was of vital importance for you.

It is possible that it has become an automatic ingrained response and reveals itself as a kind of *reflex* whenever the tension increases. This occurs regardless of the fact that there is currently no direct physical danger in your life. We understand that you are not consciously aware why you are having symptoms. We have seen these reactions in the animal kingdom. A famous example of this is the phenomenon of *head-withdrawal*. When an animal has been regularly hit in the past, it always ducks away even in safe situations when someone with a raised hand approaches them quickly.

Everything that has happened to you had not only physical consequences for you, but also psychological consequences. That is why you feel more anxiety and are less sure of yourself, and you don't dare leave the house as much. You have been avoiding social situations and find yourself in a vicious circle through which your world is getting smaller and smaller. Attention will be given to these facets in your treatment. Do you recognize these things in yourself?

The treatment plan contains the following: gaining insight into how the movements began and discussing the important experiences from her history (hypnosis/psychotherapy); an exercise program to learn how to re-gain control of the movements (hypnosis/psychotherapy); and participation in a group therapy program to improve her assertiveness and developing social contacts and activities.

26.10.3. Hypnosis and psychotherapy

First, Mrs Allen becomes familiar with hypnosis and autohypnosis (induction; deduction; deepening). She also practices with audiotaped ego-strengthening exercises, and in hypnosis she creates a symbolic 'safe place' for herself where she can go when she needs it. Then, age regression is used in order to explore the emotions associated with the symptoms. To help Mrs Allen become accustomed to reflecting on the past in hypnosis, the therapist suggests she return to pleasant and positive events in her life. During hypnosis she reflects on incidents of being physically abused by her ex-husband. She remembers an argument about the extramarital affair. Her ex-husband hits her on the head several times. While in hypnosis Mrs Allen describes being very anxious; she tries to protect

herself by holding her arms to her head and turning her head away. She starts reacting with the same movements that burden her. The therapist decides to utilize the situation therapeutically and describes what he sees happening, and he re-labels her behavior in a positive sense:

You duck and try to protect yourself against the strikes that you receive. This was the only way you were able to protect yourself from your ex-husband's physical overpowering, but at the same time you resist with all of your strength. The severity of your movements shows how great your strength and resistance were against the negative approach of your ex-husband.

The therapist encourages Mrs Allen to express her emotions and to say to her ex-husband what she thinks of him. Then the suggestion is given that her muscles can relax afterwards and that calmness can come to her body. Eventually the movements calm down and finally cease. The therapist then gives a three-part post-hypnotic suggestion: (1) she now knows what the movements represent; (2) she has now experienced how decisive and strong she actually is; and (3) the exercise program can teach her how to regain the control over her muscle movements.

The exercise program consists of learning catalepsy (see p. 631). First the therapist teaches Mrs Allen catalepsy of the arm. Achieving this is complimented and she is asked to direct her attention to how the sensation of catalepsy feels and to store this information in her memory so that she can invoke these experiences in hypnosis (i.e. cue conditioning for rapid procedure). Afterwards, the catalepsy is discontinued by shaking the arm. This exercise is practiced a number of times until Mrs Allen succeeds in inducing the catalepsy in a very short time. Then she practices with the left arm and with both arms.

Next Mrs Allen practices with this method when her complaints are actually present, first together with the therapist and then independently. When she is able to sit sufficiently calmly for a long enough time, a self-control procedure is practiced, the so-called *1-2-3 technique*. This technique reverts back to what she had practiced earlier, namely the *cue conditioning for rapid procedure*. The therapist practices with Mrs Allen while both are standing. He supports

her shaking arm and wrist, and extends the arm until it is in a horizontal position. Then he asks Mrs Allen to go into hypnosis and to concentrate on the sensations of catalepsy with the following suggestions: (1) concentrate on your shoulder and on the sensation of catalepsy: *calm, rest, control*; (2) let that feeling flow through to your elbow: *calm, rest, control*; and (3) let that feeling flow through to your hand: *calm, rest, control*. Then the therapist guides the arm down until it hangs limply, and the procedure is practiced again. The procedure is repeated every time the arm or hand shakes or trembles until she restores calm. Through this, Mrs Allen also gains more control when performing normal daily movements. Gradually an attitude of self-efficacy develops where Mrs Allen has a quiet confidence that she can master the symptoms.

Eventually, Mrs Allen practices with small role-plays to retain the catalepsy in more difficult situations such as with open eyes, while talking with the therapist, in the home situation and in public places. The *1-2-3 technique* is repeated each time she begins to shake. In this way she learns to be in control of her complaints anywhere she is, and to intervene early, when there is only a glimmer of a problem.

During the therapy sessions, the therapist found it important to be aware of Ms Allen's breathing. There is often hyperventilation or shallow breathing associated with the motor symptoms. Suggestions to breathe deeply and to allow for breathing from the stomach are effective when Mrs Allen masters the method she practices at home. With assistance, and with gradual exposure to social situations, Mrs Allen succeeds in going outside again and visiting people.

26.10.4. Outcome

Near the end of the 3-month inpatient treatment, and merging into the outpatient therapy, Mrs Allen's gradually returns to daily life, spending more and more time at home. She continues to practice hypnosis intensively at home. She is prudently vigilant for difficult or burdening situations which might trigger symptoms. She does not return to work, but she does do volunteer work for a few half-days

during the week. This gives her the freedom that she needs. Her slurred speech has improved 75 percent without having paid any specific attention to it in treatment. The intervals between her aftercare appointments are continually extended and are finalized after 6 months. At one year follow-up, her treatment gains were maintained.

26.11. Discussion and conclusions

The main purpose of this chapter was to discuss a comprehensive protocol for the treatment of CD and SD, including the use of hypnotic techniques. Several theoretical models and neurophysiological studies emphasizing the parallel between hypnotic and conversion phenomena support the use of hypnosis in the treatment of CD. Group studies as well as clinical case studies support that notion that hypnosis can be helpful for some patients suffering from CD. For these patients, customized hypnotic techniques appear to help restore motor control via indirect and direct suggestions.

Although hypnosis was not identified as a necessary factor in the treatment model described in this chapter, the comprehensive treatment program as a whole appeared to be highly effective. These findings are in line with the findings from a review by Wade (2001) indicating that a multidisciplinary rehabilitation approach with several simultaneous interventions may be most successful. Such an eclectic approach is consistent with the fact that CD and SD constitute a heterogeneous group with differing etiological backgrounds. The argument that CD should be treated as a symptom rather than a primary diagnosis appears to be quite valid. Although primary attention should be paid to symptom reduction within all treatment strategies, comorbidity should also determine the specific choice of treatment or combination of treatment strategies. For example, patients having SD with a long-standing history of conversion symptoms combined with pain require different treatment than SD patients having a history where sexual and/or physical abuse predominated.

Another complicating factor in the treatment of CD is that the connection between conversion symptoms and psychological triggers is often clear. When this is the case, our default option is to focus on the physiological, social and psychological consequences of the symptoms. The physiotherapeutic treatment takes the lead role, and the psychotherapeutic interventions are mainly geared towards breaking through the social and psychological barriers which maintain the symptoms.

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CHAPTER 27

Trauma-related disorders and dissociation

Mary Jo Peebles

27.1. The domain of the problem

The term trauma-related disorders, instead of simply trauma, is used in the title of this chapter because people who need a trauma-focused psychotherapy can present in hidden ways. Post-traumatic stress disorder (PTSD) is the clearest and most familiar presentation; however, people who have been traumatized alternatively can suffer no lasting symptomatology, can present with symptoms of dysregulation (of emotions, of self, of impulse control or of physiology) or can even develop severe psychiatric disturbances such as borderline personality disorder, schizoaffective illness with psychosis or dissociative identity disorder. What this chapter addresses is the application of hypnosis when a careful evaluation of the patient's symptoms, history and functioning determines that a trauma model of psychotherapy is called for.

Dissociation is also addressed in this chapter because dissociation is a coping mechanism commonly called into play when there has been trauma. In fact, if a person's struggle to stabilize after trauma has reached the point that psychotherapy is necessary, dissociation has usually become problematic in some way. Being able to recognize both blatant and subtle forms of dissociation helps us locate traumatic triggers for the patient and fend off unhelpful

abreactive flooding. Helping the patient learn to use dissociation adaptively, and repairing the splits in self-integration caused by chronic overuse of dissociation, are also part of any trauma-focused work. These skills become particularly salient when hypnosis is included in trauma treatment because hypnosis is an altered state which is itself to some degree dissociative.

27.2. The clinical application

27.2.1. What do we mean by a trauma model?

It can be argued that there are four core frameworks for organizing the direction and focus of a psychotherapy process, whatever one's theoretical language and emphasis (Peebles-Kleiger, 2002a). The trauma model is one of these core frameworks. This model is used when we need to (1) re-regulate biological and neurological processes and processing that have become chronically unstable and dysregulated due to trauma; and (2) re-integrate fractures in the experience of self, significant others, memory, processing of emotion and orientation to the world left by the efforts to cope with trauma.

Across multiple theoretical perspectives (e.g. behavioral, cognitive, psychodynamic, relational/humanistic), the consensus has emerged clinically and empirically that trauma-focused work contains three necessary aspects: stabilization;

controlled reprocessing; and integration. These aspects are frequently referred to as phases; however, the term, 'phase' is misleading because it implies a linear progression from one step to the next. Trauma work is never that linear. It is more overlapping and recursive. We stabilize; bits of memory pop out and we focus on regulating the remembering; simultaneously we reinforce the stabilization; some integration takes place; but then new unexpected but related slices of memory pop out to shake up the stabilization and integration once again. And so it continues. It is helpful, though, when describing the specific tasks and methods within the three phases, to discuss them independently. Peebles-Kleiger (2002a, pp. 148–165) devotes a chapter to outlining these tasks and methods, and she provides examples of implementation from several theoretical viewpoints. The reader is referred to that text for a summary of the basic methodology and the rationales (and research supporting those rationales) behind the particular tasks and methods within each phase.

A number of other texts describe therapeutic work with these patients in even more detail. They examine the special technical aspects of psychotherapy with these patients and describe how cultural, developmental and forensic matters influence the course of treatment (e.g. Courtois, 1988, 1999; Herman, 1992; van der Kolk *et al.*, 1996; Bromberg, 1998a; Brown *et al.*, 1998; Chu, 1998; Solomon and Siegel, 2003; Koenig *et al.*, 2004).

27.2.2. Hypnosis and trauma

There is a wealth of clinical material on the use of hypnosis in the treatment of trauma. Brown and Fromm (1986, p. 273) summarize the early literature detailing with how hypnosis has been used to treat traumatic reactions going back to the treatment of hysteria during the late nineteenth century and the treatment of 'shell-shocked' soldiers in both world wars. Brown and Fromm also summarize a key paradigmatic shift in the application of hypnosis to trauma treatment that mirrored a shift in psychotherapy in general. Originally, theorists posited that trauma-related pathology was caused by terrifyingly intense affect that nonetheless remained

unexpressed (Breuer and Freud, 1893–1895; Janet, 1909, 1919/1925). It was believed a cure could be realized by using hypnosis to enable the patient to abreact the painful memories, as if the patient were purging herself of psychic toxins. In fact, Breuer and Freud call this approach the 'cathartic method'. Within that original paradigm, hypnosis was used to access memory in order to re-live its full emotional impact.

It is universally understood now that, by itself, abreaction is not sufficient for recovery, and can in fact risk psychological damage when used as a stand-alone approach. Therefore, the current paradigm of trauma treatment keeps mastery, stabilization and integration at the core of healing, with exposure to memories being secondary and cautiously dosed. The utilization of hypnosis in trauma treatment has correspondingly become measured, carefully focused and expanded with the aim of including fostering of self-regulation, internal/external boundaries, amplification of the healing aspects of the therapeutic relationship, boundaries between past and present, and choice. There has been a special interest in finding creative ways to deepen integration via imagery, metaphor and amplification of corresponding sensorimotor cues. In short, while hypnosis is rightly still used to enable the patient to encounter troubling memories and feelings, it is even more critically useful in establishing the sturdy therapeutic frame required of this work: a context of alliance, support and hope, all in service of stabilization, controlled reprocessing and integration (e.g. Brown and Fromm, 1986; Peebles and Fisher, 1987; Peebles, 1989; Spiegel, 1993; Fromm and Nash, 1997; Brown *et al.*, 1998).

The consensus about the interface of hypnosis and trauma treatment is that, again, hypnosis is merely a particular state or experience, which is being used in the context of therapy to further a range of *therapeutic* (not forensic) goals. Using hypnosis as a forensic tool is an entirely different enterprise that is fraught with controversy and ethical challenge. Therefore, when using hypnosis in the context of treatment (particularly trauma treatment), one needs to (1) ensure that the rationale for the hypnotic intervention is securely embedded in the therapeutic frame; (2) stay centered on the fact that nothing about

hypnosis trumps the lawfulness of human memory with all its profound plasticity; and (3) be knowledgeable about the legal/ethical obligations to inform patients about the purpose of using hypnosis therapeutically and to disabuse them of the notion that hypnosis will reveal ‘what really happened.’ A number of instructive texts address forensic concerns: Kluft (1994), Brown *et al.* (1998) and Lynn and McConkey (1998). This chapter will confine itself to therapeutic issues only.

Dissociation is a broad-ranging term with many aspects. It refers to the general process of severing associations or connections, be they connections between ideas, between thinking and feeling, between different emotional or personality aspects of oneself or between events in time. Subjectively, dissociation can be felt by a person as a foggy, spacy, ‘zoned-out’ mental state or as a numbed physical state that is akin to feeling wrapped in cotton. Sometimes, the world can feel unreal, like a dream. Dissociation can occur outside one’s awareness and be apparent only to others, such as when a person blanks-out something they said or did or loses time.

In and of itself, dissociation is not pathological. It is a universal phenomenon that has a biological base and carries adaptational value for survival. It is ubiquitous in children as a coping strategy. Its temporary, mild use in adults can be protective and helpful. However, when dissociation takes over one’s perceptual and cognitive style; when it becomes one’s primary coping strategy; or when it becomes so severe that a person ceases to track entering and exiting dissociation, and no longer maintains awareness of experiences held within different subjective realms, then dissociation becomes problematic.

Prolonged use of dissociation (frequently seen with severe, chronic trauma) creates serious disruptions in continuity of experience that can create splintering in one’s sense of self and eventually in identity and reality. What once might have been a pliable protective device supporting resilience, becomes instead a brittle, desperate attempt to disengage radically from painful material. It compromises or even fragments identity, and it saps vitality.

A comprehensive literature exists on the use of hypnosis in treating and repairing serious

disorders of dissociation such as dissociative identity disorder (Putnam, 1989; Kluft and Fine, 1993) and on the use of hypnosis in working therapeutically with less serious and more common dissociative conditions (Watkins and Watkins, 1997; Frederick and McNeal, 1999; Frederick, 2005). These texts provide comprehensive, detailed and research-informed protocols for utilizing hypnosis in the work with disorders of dissociation. This chapter is informed by these invaluable sources as well.

It would be natural to assume that when reference is made to utilizing hypnosis within trauma treatment, one is referring to standard, formal trance procedures, comprised of aspects of induction, deepening, suggestion and debriefing. Certainly, this sequence occurs. However, in actual practice, it is the management of spontaneous trance that is called even more frequently into play—how to recognize spontaneous trance, work within it and reverse it if necessary (and know which is needed when). Familiarity and comfort with working within informal trance induction can be indispensable to the work, and is a more common use of hypnosis in trauma treatment than is typically written about.

It is important to understand that hypnosis is only one of many tools that can help in the treatment of trauma. A traumatized mind is a mind that has been fractured. As clinicians, we have at our disposal multiple methods to repair fractures in the mind (e.g. cognitive interventions to re-set disfigured beliefs and expectations; relational appreciation of how to use the therapeutic relationship to mend fractured templates of self and others; behavioral interventions to rewire conditioned responses; psychodynamic interventions to strengthen and repair damaged capacities to regulate emotion and check reality). That said, a clinician who is familiar with hypnotic phenomena has an inside track into the ways in which the dissociated mind experiences and communicates. In this regard, experience with hypnosis is second only to experience working with children when it comes to developing a clinician’s capacity for the type of listening and communicating required in trauma-related therapeutic work.

To study hypnosis (and to work with children) is to become intimately familiar with the mind’s

nonlinear and creative capacities: (1) to compartmentalize, being simultaneously aware and yet unaware of sensations, perceptions and thoughts (Hilgard, 1977); (2) to shift the focus of attention, allowing more, or less, into awareness; (3) to allow seemingly divergent realities to co-exist unquestioningly; (4) to process through imagery not words; (5) to experience another's unspoken thoughts or emotions with the same sensory vividness as if they'd been explicitly spoken; and (6) to encounter sensory sensations of thought or image so vivid that it is as if action has occurred. In short, experience with hypnosis allows the clinician fluency in the syntax of the dissociated mind so he can better hear and bring forth the details and nuances of the world inside the patient's outer presentation.

27.2.3. The technique: illustrated by clinical examples

What does the work actually look like? The response will vary because each clinician is different and encounters different kinds of patients with different kinds of trauma depending on the nature of her particular practice. The examples I will present come from my practice as a solo clinician seeing higher functioning, self-pay clients. I will describe two trauma-focused cases in which I wove hypnosis into the psychotherapy experience. The first case is an example of utilizing hypnosis without formal induction, and the second is an example of utilizing hypnosis with formal induction with someone who requested hypnosis. Neither patient presented requesting help with trauma. (This is characteristic of most of the people in my practice with whom I do trauma-focused work.) To try to draw out principles that are likely to be common among the work of different clinicians, I will intersperse, among the descriptive details of the work, referenced commentary on the ideas driving my inferences and choices of intervention. I will put this commentary in italics to distinguish it from the case description.

27.3. Case 1: Dr E.

27.3.1. Background

Dr E. was a physician, with his own small, but successful, self-run clinic. He employed a handful

of personnel—a receptionist, nurses and a bookkeeper. Since his leaving a group practice about 10 years before, he had preferred operating solo. The downside was his having to manage all aspects of the practice, medical and nonmedical. The upside was he could craft a practice which best suited his interests and temperament.

Dr E. was nearly 46 years old and had been divorced for 2 years when he came to me. He had been treated first by a psychiatrist because he had been having trouble sleeping and had flirted with the idea that he might be depressed. Hence he sought medication which might help him with both problems. He was not particularly interested in therapy. First, he had watched his ex-wife be in therapy throughout her life, and he was unimpressed with the results. Second, there was a quick-stepping, skittish quality about him, and taking a pill appealed to the part of him who wanted a rapid diagnosis and quick results. Uncharacteristically, after seeing him in intake, the psychiatrist asked for psychological testing. The psychiatrist detected something about Dr E. that did not quite fit together. Dr E. was too enthusiastic and energetic to be classically depressed and, although he complained of intermittent bouts of suicidal thoughts, he did so without much angst—in fact, his spontaneous, ruddy-faced smile and quick, good-natured way of using his wit to laugh at himself rendered him charmingly engaging. The psychiatrist found himself pulled to join the patient in laughing off darker material. Hence the referral for testing.

Dr E. could be both skeptical and earnest. Both were equally true. Thus, although skeptical of testing, he agreed to it. The results were sobering. The psychologist who did the testing was pessimistic about Dr E.'s capacity to change with any kind of psychotherapy and even about his ability to comply reliably with a medication process. He (the psychologist) believed the patient to have a significant, previously undiagnosed problem with alcohol abuse that appeared, from the psychologist's view, to underlie the majority of the patient's troubles. Further, he saw him as having significant difficulty trusting others, a limited capacity for introspection and troublesome problems regulating his emotions, with the potential for lapses in emotional control. The psychologist was concerned that any therapy

process could quickly spiral into a competitive dance driven by suspicion, a sense of vulnerability and a resulting need to dominate the process. His summary diagnosis was that the patient suffered from an antisocial personality disorder, with depressive, self-defeating and schizoid traits.

Suffice it to say, the psychiatrist was discouraged by the test results, and therefore unsure what to offer Dr E. that could be of much help. Medication for depression seemed only weakly indicated; the psychiatrist offered medication targeting the sleep difficulty instead. In addition, Dr E. had also mentioned, somewhat in passing, that he was frustrated with difficulties in sexual performance that had been cropping up in his dating since his divorce. The psychiatrist knew I did some biofeedback, and he referred Dr E. to me with the rationale that a medicalized, computerized, quantitative approach to an isolated symptom (e.g. sexual difficulties) might be the only place to begin.

27.3.2. The range of clinical presentation—commentary

The fact that someone has experienced a traumatic stressor does not guarantee that they need treatment. Conversely, people who come to us with neither initial report of traumatic stressors nor overt, classic PTSD symptoms may turn out not only to need treatment, but to require a treatment focused on trauma. Confidence in one's capacity to recognize when treatment is required, and when that treatment requires a trauma-related focus, is strengthened by knowing some of the statistics about traumatic stressors and people's reactions to them.

Interestingly, most people have experienced a traumatic event. According to surveys of tens of thousands of people in the USA, approximately two-thirds of adults in the USA report having experienced a traumatic stressor during their lifetime (Breslau et al., 1991, 1998; Davidson et al., 1991; Norris, 1992; Pope and Feldman-Summers, 1992; Resnick et al., 1993; Fairbank et al., 1995; Kessler et al., 1995). In countries or cultures subjected to chronic war, famine, terrorism or political torture, the percentage is even higher (Monagle, 1999). However, the response to a traumatic stressor varies immensely depending on the characteristics of the stressor, the qualities

of the person and the nature of the recovery environment (Green et al., 1985). Simply having experienced a traumatic stressor does not mean the person will need therapy.

Statistics regarding the impact of the nature of the stressor on response suggest that single-event natural disasters, that affect single (rather than multiple) dimensions of a person's life, are the least toxic to one's psychological health in the long term. In one study, the majority (85 percent) of people exposed to natural disasters (meeting DSM criteria for a traumatic stressor) did not develop symptoms reaching threshold for a PTSD diagnosis (van der Kolk et al., 2005).

In contrast, stressors of an interpersonal nature (particularly when chronic, particularly when they include violence and most particularly the earlier they occur in one's childhood) render the individual at special risk for complicated, lasting effects of psychobiological dysregulation typically not captured in the DSM diagnosis of PTSD. A sampling of such symptoms of dysregulation includes suicidal feelings, difficulty regulating affect, self-injury behaviors, substance abuse, promiscuity and dissociative symptoms, among others. Van der Kolk and colleagues (2005) found that interpersonal abuse typically led to dysregulatory symptoms, and that the younger one was when the interpersonal abuse began, the more likely it was that dysregulatory symptoms emerged. In their study, the majority of children (61 percent) who suffered interpersonal victimization before age 14 developed some combination of dysregulatory symptoms, while only 8 percent of people who had suffered natural disasters developed such symptoms (van der Kolk et al., 2005).

Sometimes severe, chronic interpersonal trauma is a factor contributing to even more severe psychiatric disorders such as borderline personality disorder or schizoaffective disorder. For example, Michael Stone's (1990) classic study of the treatment and outcome of 500 hospitalized patients discovered that a history of parental incest, parental brutality or both figured in the histories of 24.8 percent of patients diagnosed with borderline personality disorder; this percentage was even higher when patients were included whose abuse had been at the hands of nonfamily members. In the same study, a trauma history was more prevalent (27 percent) than genetic

predisposition (12.5 percent) in Stone's cohort of schizoaffective patients. Further, the group of schizoaffective patients with genetic contribution did not overlap the group with incest history, suggesting the hypothesis that severe interpersonal traumatization could fracture one's mind to the same psychotic extent that genetic predisposition could. As Stone put it, '... these patients may have come into the world not especially vulnerable genetically, only to succumb to a condition in every way mimicking a mixed psychosis—a condition set in motion purely by the same extremes of sexual/physical abuse that, under other circumstances, give rise to the syndrome of multiple personality. Here we may legitimately speak of a "posttraumatic psychosis"... certainly, reality-testing may give way under the impact of severe trauma ... (1990, p. 238, emphasis Stone's).

Finally, it is helpful for clinicians to be aware that PTSD rarely occurs alone without other symptoms and disorders also being present. Eighty-eight percent of people diagnosed with PTSD have at least one other psychiatric diagnosis and 59 percent have three or more disorders (van der Kolk et al., 2005; Spinazzola et al., 2005). The most common of these co-existing diagnoses are depression (48 percent) and alcohol abuse (52 percent); additional, frequently co-occurring diagnoses are substance abuse and phobias. People with PTSD are 15 times more likely to have made a suicide attempt than those without the diagnosis. Stating it differently, 1 percent of people with no psychiatric diagnoses attempt suicide; 4 percent of people with a psychiatric diagnosis attempt suicide; but 20 percent of people with PTSD attempt suicide (Spinazzola et al., 2005). Notably, it is often these other diagnoses that create the attention necessary to bring the person to therapy, rather than any mention of trauma. It takes awareness, careful listening and a good history to reveal the possibility that a focus on trauma may help organize the treatment work effectively.

It is clear from these data why using hypnosis in the treatment of trauma-related disorders goes beyond familiarity with the PTSD diagnosis alone. Clinicians who will be using hypnosis in the treatment of trauma will need to be experienced in treating a variety of psychiatric conditions and a range of severity of disorganization and destabilization.

27.3.3. The therapeutic relationship

I should explain that, although I do some biofeedback work in my practice, it is confined to basic measures of autonomic arousal such as shallow breathing, skin temperature, galvanic skin response and muscle tension. I had never used biofeedback to treat disorders of sexual performance, nor did I have special training in sex therapy *per se*. However, the psychiatrist was a long-standing colleague of mine. We had worked together closely over the years; we had a sense of each other's work. I did not question his referral for those reasons. I understood that sometimes, in the density of a clinical moment, we may have a sense of what the patient might need or where to begin without having all the words immediately to back up our impressions. Because I trusted my colleague based on multiple previous clinical experiences with him, I did not focus on the overt disconnection between what he said the patient needed and what my skill-box could provide. Instead, I began with the premise that what I could provide and what the psychiatrist sensed the patient needed overlapped somewhere. We just did not know where quite yet.

I liked Dr E. immediately. Rather than being withdrawn or aloof (as the test report term, 'schizoid traits', might suggest), he appeared full of life—he was both engaging and mentally quick. He jostled pugnaciously and gamboled delightedly with word usage. He loved exercising his mind, and seemed to want someone to play with. Simultaneously, he restlessly tossed off insights with scrappy vigilance, but with an impish edge. It was as though he were testing if I were alert; if he could defeat me; if he could speed past me; if I would keep up with him; if there was the chance he might trust me; if disappointment was inevitable; if all this would become the same old game it always turned out to be. One could see by the color in his cheeks and the sparkle in his eye that this complex mixture of ingredients created the kind of encounter that made him come alive. I remembered the psychologist's words, 'competitive dance'. But I also remembered the adjoining qualifying phrase, 'driven by suspicion and vulnerability'. Where was the suspicion and vulnerability, and what were they about?

When I asked him to tell me a little bit about himself, he spoke spontaneously about his early life. He was the oldest and only son of four children, born to a wealthy, powerful attorney and a beautiful socialite. He felt that to his mother he could do no wrong, and yet, as he described vignettes of his mother, she seemed to be constantly shaping him, pulling him in quite close emotionally, and instructing him in how to satisfy women better than his father did. He described how, when he was latency aged, she schooled him in the importance of attending to a woman's feelings, and when he was an adolescent, she alluded to bedroom details to illustrate the boorishness in his father that he should decidedly *not* emulate.

He described his father as someone volatile and immense, who used his razor-sharp intellect and penetrating gaze to bore into a person with withering exactitude, shredding them into pieces and throwing them away. He painted scenes of father's ruling the house with his rages, and he wondered aloud, as he spoke, if father might have been bipolar. Dr E.'s demeanor, as he was describing his father, was one of rueful, flushed, good humor, as if you just had to laugh at what a character that guy, his father, was. Yet, when I asked him if he had ever been scared, he remembered something his mother once told him after his father died: that as early as age 2, whenever father entered the room, Dr E. used to shake uncontrollably.

The test results had puzzled and floored him, but again he spontaneously laughed as if to say, 'What else can you do but laugh at stuff like that?!' He remembered the psychologist telling him that not only was alcohol a major problem, but that he was the kind of person who was probably physically abusive in the house. Dr E. said he drank, but not more than two to three times weekly and never to the point where he blacked out or felt 'drunk'. He reported never having laid a hand on anyone physically in his house. (The psychiatrist reported to me that Dr E.'s ex-wife had concurred with Dr E.'s report about this.)

When I asked Dr E. what he most wanted to get out of treatment, he seemed to forget for a moment that he had been referred to me because of his sexual difficulties. Instead, in a moment of sudden, unexpected clarity and

openness he stated, 'I talk a lot, but nothing changes, nothing connects'. He went on, 'I want somehow to reconnect, my mind with my body, and vice versa'.

The plaintive lucidity of this simple wish spoke of a man who was open to his feelings and his experience ... and potentially to relationship—how else could he know something was missing, and how else could he share and admit that to me? This was puzzlingly discrepant with the test report findings of 'difficulty trusting' and 'limited capacity for introspection'.

On the other hand, the quality of Dr E.'s speech did echo something the testing psychologist must have been registering. I noticed that although his face was flushed and his body was taut with radiating energy, the pupils of his eyes were tightly controlled lenses. They were pinprick holes, tiny apertures, within a sea of unmoving, gray glass. Was that his suspiciousness peering out? I also noticed that Dr E. talked very quickly. His mind was like the spinning of a hummingbird's wings. Sometimes ideas were glanced at, and flitted between, in such rapid succession that a paragraph of words could become blurred in meaning to me. I began to realize I was getting overwhelmed. It was not the quantity of ideas, or an inability to track segues between them intellectually. What I could not hold onto were the multiple emotional resonances building inside me—the inner reverberations to each of Dr E.'s ideas, with every reverberation opening multiple doors within me, stimulating even more reverberations, that began accruing with overwhelming speed and intensity until there was nothing but an internal spinning of emotional information, none of which was being spoken to or acknowledged by Dr E. Was that what the psychologist had called a limited capacity for introspection?

I began to feel like a passenger in a car with no brakes. I was hurtling at breakneck speed, one minute dazzled at the mesmerizing landscape and another minute, dizzy with a tinge of motion sickness. Soon, nothing was any longer dazzling; instead, I began to feel slightly numb. I found myself watching, rather than interacting. I needed to push myself and exert energy to try to open up space into the conversation. When I finally did speak, to try to comment on something he had just said, I fumbled and felt lost, oddly and uncomfortably mentally frozen.

27.3.4. The classic three of trauma reaction—commentary

Given the multiple ways trauma effects can present, what helps the clinician consider the possibility of trauma when its presence is not immediately apparent? In this regard, Horowitz's (1986) rigorous fieldwork identifying the biphasic qualities of intrusion and avoidance has withstood the test of time, and does cut across the range of symptom presentation, if one tracks both their blatant and sophisticated manifestations. Horowitz's findings form the basis for two of the three symptom clusters of the PTSD diagnosis. In its blatant manifestations, intrusion refers to the repetitive, involuntary re-experiencing of feeling, image, thought or behavior fragments of the original traumatizing events, and avoidance refers to ways of getting away from awareness, memory or sensory registration of stimuli that trigger re-experiencing aspects of the traumatizing events.

Sophisticated dissociation

There are two types of sophisticated intrusion/avoidance: sophisticated dissociation and sophisticated abreaction. Here I comment on the former. In Case 2, I comment on the latter.

What is important to keep sight of clinically is that intrusive and avoidant phenomena can be less dramatic than described in DSM. They can be embedded, in sophisticated ways, within the person's manner of speaking, relating and behaving. In my practice, the blatant forms of intrusion such as dramatic flashbacks or blatant avoidant (dissociative) behavior such as a stunned, blanched face with sightless stare occur more with: (1) people with recent, acute, adult-onset trauma (more classic PTSD); (2) patients who have been in therapy for a while and whose work has purposely focused on loosening automatic coping styles to access underlying intensity; (3) people who are constitutionally fragile and who thus perhaps never reliably stabilized with consistently dependable coping mechanisms in the wake of early, chronic trauma histories; or (4) patients who may have been fairly stabilized, but who suffered a recent traumatic stressor that unexpectedly triggered emotional access to an early trauma history. For different reasons, these four groups of people are less well protected from the raw immediacy of the original memories, and thus show

less disguised, more dramatic manifestations of intrusive and avoidant phenomena.

However, for a large group of patients seen in an outpatient clinical practice, intrusive and avoidant phenomena take on subtler forms. This frequently occurs for people with a history of chronic interpersonal trauma, but who (perhaps because of internal/external resources such as intelligence, imagination, special skills, ways they had to escape, a person in their early environment who served as a stabilizing touchstone) have found sophisticated ways to use their intellectual and interpersonal skills to cope, fit in and be productive. These people may not complain of trauma memories, but instead are troubled by depression, chronic dissatisfaction in relationships, problems with temper, etc. Upon questioning, they may reveal significant symptoms of dysregulation (e.g. trouble sleeping, irritability, difficulty regulating spending, intermittent struggles with substances, history of mild or significant eating disorders, history of verbal outbursts or history of feeling run-over by others because of not speaking, history of sexual disorders) that the patient hadn't thought of as primary issues.

It is helpful to listen carefully as the patient speaks—to open oneself to the experience of the patient's speaking, momentarily toning down the precise tracking of each word. When rapid (even lively seeming) verbal agility does not stir engagement in the therapist but instead incurs a sort of numbing and dissociation, or an experience of feeling overwhelmed, then the therapist may be experiencing a sophisticated manifestation of the patient's dissociation. The patient's voice inflections may seem expressive, but in fact are too many or too 'bright', or just enough off the message to create mental confusion within the therapist rather than clarity and emotional engagement. Or, the patient's non-verbal mannerisms—arrhythmic agitations of the hands or shifts in the body—form complicated, nonrepeating patterns that can't be accommodated to and thus begin to distract and confuse. Rather than the hands extending the message of the words, they obfuscate and thus create gaps in the therapist's registration of the words. The line of conversation becomes pockmarked into discontinuous bits, which then can't be encoded by the therapist as an organized whole, and thus can't be tracked or remembered easily. Like all forms of avoidance, sophisticated

dissociation protects the patient by distancing him from his own emotions and memories, and by distancing his therapist from feeling an immediate emotional connection with him (that could risk stirring flooding relational memories).

2.7.3.5. The counter-transference

I have not always known what to do with feeling numb in a therapy session. In fact, it has only been after figuring this out that I have realized, in retrospect, I had previously been ashamed of and anxious about my reaction. I had thought something was wrong with me (wrong with my psyche, wrong with my empathy)—why else was I beginning to get fuzzy-brained and having difficulty feeling in the session? So I had tried to hide the reaction from myself, not letting the awareness of it last long. When it popped up, I would try various ways to alert myself mentally (occasionally even surreptitiously trying to pinch myself!), almost as if I were trying to force myself into a beta wave state. However, once it became clearer to me that this was a feeling, like any other, and as such could be tolerated and explored and considered as a potential expression of the affect reverberating back and forth within the space between me and the patient, then the recognition of it as dissociation was immediate—because it was now mentally allowable to me for consideration.

By the time I was treating Dr E., I had gained some familiarity with recognizing and working with my reaction of numbing so that it took only a couple of sessions with Dr E. for it to reach my awareness with him. The awareness was still not immediate, however, because Dr E. was so expressive and lively that my brain was confused by the contradiction between his liveliness and my numbness. In addition, I think something in me was activated by Dr E.'s unspoken competitiveness and challenge to keep up with him; as a result, I became reluctant to admit that I was not up to the task. But once I was able to accept being aware of being numb, I then had a helpful piece of information about something that was happening in the room between us. Being able to name the numbness (i.e. call it dissociation) made it possible for me to work mentally with it; e.g. 'If I am dissociating, I must be getting emotionally overwhelmed

because dissociation is a signal of overload'. And further, 'Maybe Dr E.'s rapidly skating across ideas, without sinking into the emotion of them, is his own sophisticated form of dissociation that is protecting *him* from feelings or awarenesses that otherwise might overwhelm *him*'.

27.3.6. Trauma and counter-transference—commentary

An intriguing, and potentially highly rewarding aspect, of doing depth, relational work in psychotherapy (which is the base from which I listen) is that we as therapists are one instrument or medium through which the patient expresses herself. The patient moves through us. Thus, listening carefully means more than just tracking words attentively. It also involves attunement to one's self and the resonances that begin bubbling up from within, be they physical sensations, images, meandering thoughts, emotions or attitude. Attunement is not hypervigilance. It is openness to what is there, without judgment or premature conclusions.

From this space, counter-transference becomes so much more than the historical definition of projecting our conflicted feelings or relational expectations onto the patient, distorting an accurate registration of what is there. Certainly this happens, and is part of what a therapist learns to recognize and learn from. But we have learned to language a few additional aspects of counter-transference over the one hundred years the concept has been written about. There is the aspect of counter-transference in which the patient projects into us unspoken ways she feels or undescribed ways people in her life have felt towards her. This aspect provides a rich window into a patient's internal world and thus becomes an invaluable tool in any treatment, but particularly in the treatment of trauma in which so much is initially unworded (Peebles-Kleiger, 1989).

There is also the aspect of counter-transference in which parts (aspects or selves) of the patient interact with parts of us at an underlying, unspoken level. There is always a subtext of interaction at a nonverbal level within the therapy room—various simultaneous realities if you will—in which different aspects of the patient are engaging with different aspects of

oneself in interchanges or choreography that create simultaneous, multilayered dimensionalities to what is being spoken aloud. Allowing awareness of these dimensionalities opens a richness to the listening in which so much more can be heard and eventually worded between patient and therapist. This expands the space of awareness within the patient, opening up the potential for letting hidden, split-off parts emerge and eventually become available to her in her own ongoing, internal conversations.

Languaging intersubjectivity (and accepting it) in the field of dynamic psychotherapy has allowed clinicians to speak more frequently about this reality of the work rather than its being relegated only to the domain of work with psychotic patients (such as described by Searles (1979) or Grotstein (1994)). Some have spoken of this process as unconscious communication (Mayer, 1996); others, as listening with the third ear (Reik, 1948), or intuition (Gladwell, 2005; Piha, 2005). Freud wrote about it as telepathy (Freud, 1921; Devereux, 1953; Ehrenwald, 1955; Meerloo, 1964; Eisenbud, 1970). Certain research provides a physiological understanding of it as entrainment of brain waves and rhythms of activation (Linton et al., 1977; Banyai et al., 1982; Russek and Schwartz, 1994; McCraty et al., 1998, 2004–2005). Hypnosis heightens it (Baker, 2000; Peebles-Kleiger, 2001).

In addition, awareness of the interplay of the patient's multiplicities with one's own multiplicities is essential to reparative trauma treatment because splintering of the self is inevitable in trauma, and mending such splinters requires being able to hear that which is being hidden or is unworded, as well as that which is being spoken. However, that which is being hidden in the patient often communicates only through what is hidden or unworded in the therapist. Some call this process enactment; others call it conversations among and between self-states of 'not-me' or 'unsymbolized relational experience' (Bromberg, 1998b, 2003; Chevetz and Bromberg, 2004). Thus, listening to what is not being spoken, with multiplicity in mind, and to oneself as well as to the patient, makes possible the enlivenment of and access to multiple self-states in an aggregate way, which is at the heart of reparative work with trauma patients.

Multiplicity—the continuum

Being comfortable conversing within the metaphor or literalness of 'parts', without worry about pathology or disintegration, can add an invaluable medium (i.e. an imagistic, transitional play space that can communicate more than words) to the verbal psychotherapy work with trauma. It can be helpful to consider the possibility that multiplicity and nonlinearity are more the pervasive norm of human experience than the exception. Psychoanalysis may have been misleading in this regard when it originally conceptualized imagistic, sensory-based thinking as expressions of the 'immature' mind (Brenner, 1973, p. 49). This particular aspect of mind was the place in which negatives or conditionals held no meaning, in which mutually contradictory ideas could co-exist peacefully, in which several different thoughts could be represented by a single image or allusion, and in which a sense of time did not exist or limit the boundaries of thought. Later analysts (Kris, 1936) explained how creativity required access to that place of mind, but, still, the expression for this access, 'regression in the service of the ego', continued to convey the idea that nonlinear, imagistic, multiplistic thinking was inferior to language-based, sequential thought (and thus was 'regressed' to) rather than a vital, necessary and co-equal expression of adaptive mental functioning.¹ However, when developmental studies of children gained ascendancy over reconstructive theories of childhood, the notion of co-existence of multiple states of mind, and co-equal importance of nonlanguage sensing and sense of self, became normalized. Stern (1985) described how different evolutions of mentalization and sense of self 'remain(ed) fully functioning and active throughout life. All continue to grow and coexist' (p. 11), rather than later ones replacing earlier ones. Dahl (2005) spoke to the psycho-neurological logicity of multiplicity when she described how the very structure of the child's mind changes so much with each year of growth that a subjective experience of literally 'different minds'

¹ Gill and Brenman (1959) pointed out how hypnosis could provide access to this sensory, imagistic, timeless style of thinking.

is an inevitable part of normal development. As Bromberg (1993) wrote, 'the experience of being a unitary self is an acquired, developmentally adaptive illusion' (p. 182), and 'the self (is) a multiplicity of "self-states" that during the course of normal development attain an aggregate experience of coherence that overrides the awareness of their discontinuity' (Bromberg in Chefetz and Bromberg, 2004, p. 419).

To keep oneself oriented within this metaphor of parts and concept of multiplicity, one can consider a continuum of creative, to average, to problematic. The more access to and comfortable flexibility among parts, the more creative one can be. Conversely, the more rigidly segregated the parts of self are in terms of inaccessibility, amnesia and isolated impenetrability, the more brittle the personality and the more likely the person is to be symptomatic and in need of therapeutic help. Within this particular theoretical perspective, the goal of treatment becomes aggregation of parts (however flexibly or rigidly subdivided), not integration (Chefetz in Chefetz and Bromberg, 2004, p. 432).

27.3.7. Formulating hypotheses

It is important, as a check when formulating hypotheses, to generate more than the one that first occurs to us. So, to myself, I wondered whether (instead of a reflection of trauma-based, sophisticated dissociation) Dr E.'s rapid thinking and speaking could perhaps reflect a mild form of bipolar disorder, given his expansiveness of thinking, his energetic congeniality, his father's possible mood disorder, and the volume and pressure of his thinking. Or, perhaps I was simply having trouble keeping up with an intelligent, narcissistic man? In search of more hypotheses, I noticed aloud with Dr E. how quickly he jumped among things and asked him if he had noticed or thought about that. He tossed off my observation with a laugh saying that he'd thought for years he probably had attention deficit disorder (ADD). He noted his difficulty attending to detail, being on time and keeping his records organized; he credited his receptionist for keeping his professional life straight. So now I was juggling several possibilities, each of which took us in a slightly different treatment direction: Dr E. might need help with the expansive thinking of a

bipolar disorder; he might protect himself in narcissistic ways; he might have ADD; and/or he could be showing indications of a possible complex trauma etiology.

Further, what were we to make of the fact that his psychological test report concluded that Dr E. was unreflective, resistant to change and possibly antisocial? Clearly Dr E. had revealed flickers of a capacity for openness to himself and hints of a reaching out to me. Although intellectually agile, Dr E. certainly was neither emotionally slick nor unconcerned in the way one sometimes thinks about someone with an antisocial personality disorder. The shifting variegations of color hues across his face as we interacted revealed the impact the encounter was having on him. Thus, maybe there was more potential here for a relational connection ... but under what conditions could this potential be tapped?

It occurred to me that whether Dr E. and I only kept a symptomatic focus on the mechanics of sexual performance, or whether (and how) we pursued a more broad-based expressive therapy, pivoted on clarifying the diagnostic issues outlined above. As a way of reaching for that clarity, I decided to examine the raw test data (i.e. his actual test responses and scores) upon which his recent psychological test report had been based. To do this, I asked him for, and received, his written permission to request his original test data from the examining psychologist.

27.3.8. Hyperarousal—commentary

As a result of the body's emergency response during the fear and anxiety aroused during perceived danger, the autonomic nervous system goes on high alert, churning out excessive amounts of cortisol, glutamate, norepinephrine and dopamine, and frequently lowering serotonin. This state of high alert can disrupt sleep and concentration, and can create chronic irritability, an emotional 'short fuse', and/or hypervigilance with an exaggerated startle response. Some research has suggested that when it persists over time (particularly during early development of the brain), chronic hyperarousal, with the cascade of chemicals associated with it, can result in learning disabilities, ADD and a range of neurobiological disorders of regulation (Everly, 1995; Friedman et al., 1995; van der Kolk 1996; De Bellis et al., 1999;

Gurvits, et al., 2000). Reversing hyperarousal and helping the patient learn to self-regulate is key in reversing the negative effects of trauma; in fact, the persistence of chronic hyperarousal (in particular, the symptom of prolonged sleep deprivation) is one of two elements associated with failure to resolve acute trauma (Mellman et al., 1998; Maercker et al., 2000). Hypnosis, with its capacity for down-regulating and its quality of being able to be taught to the patient as a tool she can take with her, is particularly well suited for this work. When patients enter therapy with multiple symptoms of chronic hyperarousal, traumatization is one of several etiological possibilities.

27.3.9. Dr E.: Case formulation

The formulation of there being a trauma base to Dr E.'s difficulties did not occur to me in exactly the sequence, linear fashion and intellectual precision that I am laying out here. Up to this point in this narrative, this written explanation of my thinking has contained much more verbal exactitude and articulation than existed at the time. This narrative is an accurate description of what was occurring, but at the time, so much of my mentalization was occurring simultaneously and experientially. It was only upon examination of the test data, that the analytic part of my thinking became fully engaged and the pieces began to fit together.

The first thing that struck me in the test data was that the diagnosis of ADD was in fact not supported by the test results. His measure of working memory (the ability to retain multiple pieces of information and accurately manipulate them) was at the 99th percentile. No other measures to assess ADD had been given. What was I to make then of his rapid, scattered thinking? To discern whether a diagnosis of ADD was justified clearly required further testing. And what we had so far suggested it might not be the source of his agitation.

The projective tests revealed Dr E. to be an open man, but one for whom life was an ongoing struggle to fend off severe dysregulation.² He was

highly reactive to feeling triggers, particularly anger and violence. He struggled to keep his balance by tracking all that he was seeing and trying to account for everything. Often, he was remarkably creative when doing so. But, when affect was too intense, his reasoning and clear perception became strained and sometimes unraveled. He tried to master his anxiety with his humor. Sometimes this worked and sometimes it was not enough, and at those latter times, his burden and sense of desperation became manifest.

Relationships and connection were a second source of potential dysregulation. Dr E. had a capacity for solid, co-operative and even intimate relationships. However, too often these kinds of connections opened him up to a sense of loss or uncontrolled helplessness, whirling or falling. When that happened, Dr E. could get alarmingly expansive and intensely in charge—but that was his effort to regulate the out-of-control, dangerous falling. Or, he could look 'narcissistic'—but it was the kind of narcissism that was a retreat into the solitude of nature or literature as a regulatory self-protection; it was not a summary of his relational capacity. When there was a gentleness and sensitivity between two people, Dr E. could allow the closeness of touch and appreciation that brought him a sense of peace. However, sensitivity was a two-edge sword for him—it brought with it a shadow of femininity for him that opened him up to a flooding of dysregulated violence and confused perceptions all over again.

In technical terms, Dr E.'s testing responses did show characteristics indicative of bipolar depression. Simultaneously, however, the solidity of his psychological strengths, punctuated by the suddenness and severity of his sudden drops into dysregulation, also spoke to trauma. Further supporting this latter hypothesis were his responses to a self-report questionnaire asking about early memories. On that page, Dr E. listed arrestingly succinct descriptions of a boy in danger and knocked about, for instance:

I remember being repeatedly slapped across the face by my father for lying about having thrown a stone near my younger brother ... (I was) held and spit upon in seventh grade by a group of class bullies ... (when I was) five years old, my father discovered me sleeping on razor blades I had pulled out of the top of the linen closet to play with in my room before falling asleep.

² I interpret projective tests from a model of integrating quantitative, norm-referenced data with repeating dynamic themes, not from a model of generating subjective, symbolic conclusions about the images given (Peebles-Kleiger, 2002b).

On the next page, he wrote that writing down those memories was ‘uncomfortable’, and that from filling out the questionnaire, he had learned, ‘The human capacity for suppression is nearly endless.’

After considering the test report, Dr E.’s actual test response data, his interpersonal presentation (his rapidity of speech and thinking with the complementary dissociation induced in the relationship), his historical information (father’s violence, mother’s sexual intrusiveness, significant peer bullying) and his presenting symptoms (sleep problems, sexual dysfunction, self-reported difficulty sustaining organization and attention, Internet addiction, occasional tightness of breath, drivenness to adrenalin rushes via constant crises—all indicators of hyperarousal, possibly chronic), I formulated a working hypothesis. Dr E. struggled with underlying depression (as he had suspected), and very probably a bipolar depression. However, there was substantial support for considering the core of his difficulties to be significant emotional, relational and biological dysregulation that was an expression of a complex trauma response. The degree to which his depression could be understood as a byproduct of the complex trauma response would need to be determined after an adequate trial of treatment.

The testing psychologist’s summary diagnosis of antisocial personality disorder needed to be integrated into the working formulation; clinical mistakes are made whenever we try to resolve complexity by eliminating conflicting data rather than puzzling over how to synthesize it (Peebles-Kleiger, 2002b). My thought was that perhaps the DSM criteria that originally galvanized the psychologist’s diagnosis of ‘antisocial’ were irritability and aggression, impulsivity, failure to maintain consistency, failure to conform—all of which could be equally thought of as expressions of dysregulation, particularly dysregulation triggered by aggression—the very emotion shown in the test data to be particularly dysregulating to Dr E. and the emotion associated with his early ‘uncomfortable’ memories. The testing psychologist’s summary diagnosis of ‘schizoid traits’ could be alternatively understood as Dr E.’s seeking refuge in solitary, self-engaged, self-protective absorption in literature and nature (as illuminated by the test data).

Finally, the testing psychologist’s summary diagnosis of ‘self-defeating behaviors’ was a helpful heads-up as to the direction Dr E.’s aggressive dysregulation and depressive trends might take him should those affects get the upper hand.

27.3.10. Dr E.: treatment plan

Dr E. had been referred to me for biofeedback in association with his difficulties initiating and sustaining sexual performance in dating relationships. However, in speaking with him, it became clear he needed more, and my read of the situation was that he could make use of more. The problem was that the very thing he needed—a relationally based psychotherapy focused on complex trauma—risked triggering his self-protective efforts to control, compete, entertain, isolate and/or combat, because it was closeness with another that threatened him with ghosts of traumatic memories. Still, I knew from the test data, and from his engagement with me, that he was hungry for connection, and capable of it if one could work with him to maintain the delicate balance of safe conditions. So, I spoke forthrightly with him. I drew him back to his early words, ‘I talk a lot, but nothing changes, nothing connects ... I want somehow to reconnect, my mind with my body, and vice versa’, and explained my theories about why things remained disconnected in him. I speculated that this core disconnection, based on complex trauma, was probably at the root of his sexual difficulties ... and his other difficulties as well. I described to him how he needed a psychotherapy that was more than the hand-holding he had cynically thought was all his wife had received; how he needed repeated experiences of safety, stabilization and intellectual mastery in the face of tolerably re-experienced encounters with closeness, anger and loss in order to ‘re-wire’ the associational pathways and conditioned reactivity and dysregulation. I said a twice-weekly frequency would be ideal.

27.3.11. What is trauma; what is traumatic?—commentary

The fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (American

Psychiatric Association, 1994) defines a traumatic stressor thus:

The person has been exposed to a traumatic event in which both of the following were present: 1) the person experienced, witnessed, or was confronted with an event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others; 2) the person's response involved intense fear, helplessness, or horror. Note: In children, this may be expressed instead by disorganized or agitated behavior (p. 209).

As carefully refined as this DSM-IV definition is, clinical realities are still more complex. What is traumatic is that which delivers a blow to the continuity of experience so powerful that it fragments the experience of continuity itself. The brain cannot hold the experience in mind because the intensity of emotions neurochemically inhibits the capacity to track it intellectually, or the unimaginability of the event(s) shatters pre-existing constructs for how people and the world work, or the pieces of the experience are so incompatible with each other that the very effort to hold all the pieces together splinters the mind that is trying to do so.

Thus, it is not only, as DSM defines it, threats to one's physical integrity that can be traumatic; it is also threats to one's mental integrity—threats to one's confidence in tracking reality, to one's sense that core people are predictable and safe, to one's sense that the world is stable, and to one's confidence that one can be effective when it's not—that can be traumatic as well. And chronically fragmenting interpersonal experiences, witnessed or lived, experienced at an early enough age, can threaten mental integrity and exterminate the child's ability to take the safety and inevitability of his thinking, his world and his future for granted. Thus, a hand need never have been laid on the child to create symptoms of traumatization. Chronic fear and confusion are destabilizing, at a neurological level, in and of themselves (e.g. witness the fracturing effects of long-term exposure to a double-bind communicative style (Bateson et al., 1956)). And it is the chronicity of such destabilization—chronic dysregulation—that lies at the point of convergence of the damaging neuro/bio/psycho/social effects of trauma (Ford et al., 2005).

We speak of the effects of chronic, early trauma as having a neurologically 'wired in' quality because the early interpersonal environment literally shapes and builds (in terms of volume, synaptic pathways, neurochemical and neurohormonal release, and dendritic growth) the way the developing brain processes events, reaches conclusions and regulates mind and body. Relatedly, the attunement and containment, or lack thereof, provided by early caregivers across both normative and unexpected emotional overstimulation literally create, or fail to create, the connections in the child's brain (between frontal lobes and limbic system) for regulation, thus rendering his brain capable of steadying itself or vulnerable to short-circuiting (Schor, 1994, 2003a,b). This is essential information for clinicians who are treating trauma. Its understanding helps us have acceptance and respect for the invincibility of certain triggered reactions; because we are fighting the reality of years of conditioned neurological responses, we are best off directing our clinical energies toward helping the patient learn to catch and over-ride these responses rather than aiming to extinguish them. Its understanding gives clarity as to why stabilization and self-regulation are so essential to trauma treatment: A continuously agitated mind is mimicking the original trauma neurology—hurtling the brain into a continuous abreactive experience—and a continuously agitated mind cannot register and absorb new experiences (Lupien and Lepage, 2001; Buchanan et al., 2006). Its understanding also offers a neural explanation for the necessity for corrective relational experiences and the necessity for there being repeated multiple times as a way of effecting 'new' 're-wiring'.

The characteristics of the child's early attachments subsequently influence the qualities of the relationships he is familiar with and thus gravitates toward as an adult. He seeks out more of the same because that is all he has known; anything different is experienced as foreign psychologically and thus feels like a disjunctive or odd, noncompelling experience. For those with histories of childhood traumatization, this gravitating toward more of the same results in continually re-exposing oneself to repeated traumatization. The continued re-traumatization cements in one's expectations of self as

fragmented, disconnected, depressed, overwhelmed, ineffective, etc. The continued re-traumatization also conditions automatic expectations of others as inevitably disappointing or damaging. Further, the continued re-traumatization continually re-bathes the brain in stress neurochemicals and neurohormones contributing, some research suggests, to neurologically based problems with chronic emotional reactivity, difficulty maintaining calm focus (ADHD), substance-use difficulties, etc. These processes are believed ultimately to shape the brain itself (see *Hyperarousal*, pp. 657–658).

Thus, research is ample to support that what constitutes a traumatic stressor extends beyond what DSM has thus far identified and includes chronic interpersonal experiences of dysregulation as well. Bromberg (2003) states, ‘Trauma (is accurately defined) not according to its specific content, form, or objective magnitude, but by the degree to which it cannot be held or contained by a person without a flooding of unintegratable affect’ (p. 690). I recommend Bromberg’s definition of trauma because it offers a comprehensive umbrella for a variety of traumatic events (short-lived and chronic, long ago and recent, physically threatening and psychologically threatening) that alert us to the need for applying the trauma model to psychotherapy. In addition, Bromberg’s definition communicates implicitly the reasoning behind the trauma model of treatment: if the flooding of unintegratable affect is the source of the brain’s and mind’s fragmentation, then the treatment becomes slowing the flood down enough so that individual threads of the experience can be picked out, named, made discussable, eventually reliably recognized, all within the context of a continuously regulating other. In these ways, the previously unintegratable affect becomes integratable. When this happens, the person has a chance to know her experience rather than only being blown away by it; she has a chance to get some distance and begin to connect the dots intellectually; she begins to feel known; feeling known helps her begin to feel more in one piece, maybe with some hope and some beginnings of trust; and at that point she stands a chance of rebuilding a new map of in what ways the world, people and good things may be counted upon. This model of trauma treatment strives for a sort of ‘re-wiring’ of the brain

through deconditioning responses, creating alternative associational pathways and developing more reliable neuropsychobiological regulatory systems.

Simple versus complicated (complex) trauma

Being described in several ways throughout this chapter is the concept that the treatment of trauma, and the use of hypnosis in its treatment, can be simpler or more complex depending on the kind of traumatic event, when it occurred in the person’s life and how long it went on. The more an event is a single event, of brief duration, with no man-made violence, occurring in adulthood, the more it will evoke a ‘simple’ or less complicated trauma response. In contrast, the more the trauma consists of multiple events, over extended time, with man-made violence, and occurring in childhood, the more the trauma will create a complex trauma response.

A ‘simple’ trauma response is severely destabilizing, but its resolution can be more straightforward because: it tends to create fewer fractures within the person’s continuity of self and experience of others; the disruptions in one’s experience of safety in the world tend to be more easily repaired because there is a fabric of stable, predictable experiences to fall back on; and the treatment work is not saddled with reworking gnarly, relationship-hampering characterological traits that arose as protective responses to trauma or having to rewire conditioned neurochemical responses that, if left untreated, continue to destabilize continually.

This is due to the neurocognitive impact prolonged hyperarousal can have on the developing brain and, consequently, the child’s developing emotional, interpersonal and coping style capacities. For example, prolonged stress creates excessive excitatory stimulation of the central nervous system. This prolonged excessive stimulation can be toxic by releasing a cascade of excitatory neurotransmitters (glutamate, norepinephrine, dopamine) which in high concentrations are capable of damaging or destroying the neural substrates they serve, as well as lowering the stimulation threshold for subsequent hyperarousal effects (Everly, 1995; Friedman et al., 1995; De Bellis et al., 1999a). This neural excitatory toxicity damage translates into effects

such as memory and concentration impairment, aggressive behavior or hyperirritability, attention deficit and diminished affiliative behavior (see Gurvits et al., 2000). Additional neurobiological effects include diminished serotonin levels (van der Kolk, 1996), complex shifts in cortisol levels (Everly 1995; van der Kolk, 1996) and impairment in limbic system function as well as possibly structure (van der Kolk, 1996; De Bellis et al., 1999b; Metcalfe and Jacobs, 1999). These effects are associated, respectively, with hypersensitive, irritable, and impulsive behavior, impairments in memory and concentration, and disruptions in assessments of danger and explicit memory formation. Thus, the child exposed to the chronic overstimulation of fear, anxiety or a sense of danger is at risk for temporary or permanent impairment to neurocognitive systems that regulate arousal and the encoding of information about the world.

The psychological implications for a child of such neurocognitive events are substantive and complex (Perry et al., 1995; Thomas, 1995). Dysregulation of arousal systems, hypersensitivity, disruptions in the assessment of danger and proneness toward aggression and impulsivity naturally are going to have a profound negative impact on the maturation of emotional regulation capacity. Difficulties attending, concentrating, remembering and assessing danger will negatively affect developing interpersonal capacities including self-esteem and attachment structures (e.g. Nathan, 1998). In addition, experiences of prolonged helplessness in the face of perceived danger shapes the templates the child fashions about the reliability and trustworthiness of others, the effectiveness of one's self-agency and the possibility of safety in the world, frequently stunting the child's developing sense of hope in the future (Terr, 1983, 1991) and his ability to believe in and accept help from others.

Interestingly, it was a book about hypnosis (Brown and Fromm, 1986) that contained one of the first references to this notion of trauma as simple versus 'complicated' (their term) and the different treatment requirements for each. Judith Herman's (1992) book on 'complex' trauma (her term), with its in-depth synthesis of existing knowledge about the effects of prolonged trauma in the context of violence and control, became a reference point for research

on the diagnosis called *DESNOS (Disorders of Extreme Stress Not Otherwise Specified)*. The October, 2005 issue of *Journal of Traumatic Stress* (vol. 18, no. 5, pp. 379–460) carries a special section of articles about complex trauma, its characteristic symptoms of dysregulation and the resulting special treatment needs that those require.

27.3.12. Dr E.: treatment

Dr E. was understandably (and one could say wisely, given his history and resulting vulnerabilities) skittish about a psychotherapy process. He began to focus, with an intensity not previously present, on his sexual performance symptoms and on his having expected that I would have provided him biofeedback for this.³ In fact, he put forth his theory that all of his relational and emotional difficulties had at their heart his inability to rely on himself in bed. He felt that if he could feel confident in his ability to master the physiology of the bedroom, he would be able to sustain relationships, he would be organized and focused in his self-care, and he would not be anxious and depressed. I listened. I pondered aloud that we both were saying important things. Could I refer him to a colleague (a sex therapist) with whom I could collaborate? Together, we could all work towards the same aims. He agreed. And he agreed to see me once weekly (not twice per week).

I have seen Dr E. for a little over a year. From a trauma-focused perspective, the psychotherapy has worked from many angles to create a stabilizing place inside Dr E. I begin from the center of our relationship, appreciating that the experience he has with me, in the emotional back and forth between us, carries the potential for creating a new relational template within him.

³ I had let Dr E. know in our first meeting about my not being experienced in treating sexual dysfunctions with biofeedback except from the vantage point of giving him tools for overall autonomic regulation and relaxation. He had been interested in our still meeting anyway despite my disclaimer. In our initial sessions, he never returned to the concerns about his sexual symptoms. He did not return to them until I recommended twice weekly relationally based therapy. His return to them then was with an intensity and proposed centrality that had not been there previously.

Because this template is experienced implicitly, at a nonverbal, neurophysiological level, it is a particularly powerful tool in therapy. I can amplify the therapeutic aspects of this effect, and assist Dr E.'s ability to sustain and replicate the therapeutic aspects of it, by speaking explicitly ... about what is taking place when we emotionally connect, what internal structures are being built within him, and how what is taking place will help him with his goals of feeling more connected to himself. When I name something that happens between us, or what I notice within him, the invisibility and implicitness of the process is then verbalized, defined and its value made tangible. Once the emotional process between us becomes tangible to Dr E., he can begin to notice and track responses within himself—ironically, like biofeedback, but with me as the registering and reflecting 'machine'.

For example, when Dr E. rapidly (with intensity but no definable emotion) spins out the details of his girlfriend's telling him over dinner how inadequate he is as a father and how she can understand why his wife left him because clearly he can't manage his life and is way too needy, I become momentarily flooded with all that has just happened to him emotionally ... and he has left me behind and is speeding into the next vignette. I stop him, probably clearly showing feelings of being stunned and incredulous, and say, 'Wait a minute. Could we just slow down for a second? I'm just catching up with what you just told me. Boy. That leaves me reeling. What did that feel like for you?' He answers, with a startled, tight laugh, 'I'm not thinking much about it. You mean why did she say that? She was referring to (speeding up again) what I had told her about forgetting to pick up my kid for his soccer practice and she has a problem with that; listen, it's true, I am forgetful, but she's afraid—I know this about her—she tries to figure everything out—it goes back to her parents' marriage and how surprised and everything she told me she was when it didn't work out, and she just thinks if she can nail me somehow, the same thing won't happen to her; she likes to analyze everything ...' I interrupt again. 'I'm getting lost again—I'm still stuck on what she said to you at dinner. It sounded really critical; what I meant was, what did that feel like to you?' His face winces, as if uncomfortable. He tries to laugh.

'Well, it didn't feel so great'. He shifts, as if trying to get away from something. 'I mean I guess it was critical'. I repeat the girlfriend's words: 'Inadequate?' 'Needy?' He is slowed down now. 'Well, you're right. I get your point. She's got this judgmental side to her'. He tries to joke. 'Why do I keep ending up with women like this?' I say, with gentle seriousness, 'Maybe it's so familiar to you that you just don't notice it'. He is reflective. 'Yeah, I like the edge—the banter back and forth—I like that she's quick, but ... there's this harshness ...'. He shakes his head.

The working model in my head is that Dr E. is reliving the relational templates from his family home, in which one dodged bullets of sarcasm and put-downs, delivered in rapid succession meant to bring the other down. Intensity ran high, but it wasn't identified as emotion; it was merely rapid mental running and dodging and, later, trying to give it back. The pace was frenetic. To slow down wasn't safe. The object was to not feel, to not take the other in, because the connections were toxic. Dr E.'s reliving of these templates is a form of behavioral remembering or intrusive recall. This is one reason I draw his attention to the frenetic pace. Another reason is that his style of running and dodging achieves what it was originally meant to do—it prevents him from taking me, or himself, in. However, because of that, he can't feel what he is feeling; he is in a chronic state of agitation; and he has lost the means to self-soothe. As part of the stabilization aspect of trauma-focused work, my job is to help him learn ways to self-regulate and gradually desist repeatedly exposing himself to the mini-traumatizations he constantly (unwittingly) opens himself up to.

27.3.13. **Becoming, through conversation—commentary**

One learns, and becomes more fully, who one is within conversation with another. In the process of speaking,⁴ one hears aloud one's thoughts outside oneself, and thus one can hear in a different way, walk around the thoughts, view them from different angles, and absorb, comprehend and amend them. When speaking occurs with/to

⁴ Or signing, or picturing—whatever form the process of symbolic communication takes

another, who is truly listening and absorbing and reflecting back what she is hearing, then what is inside us achieves even fuller dimensionality through crystallizing, in concrete, visible form, the actuality of thought itself—what was once unheard, unfelt thought now reaches visible, sensorially experienced impact on and response from the other.

The resonance and depth of this process are universally longed for but become even more urgent where there has been trauma. Where trauma occurs, bits of experience get broken off, disconnected from and hidden—as an outcome of the fragmentation caused by a brain overwhelmed, and as a way of self-protecting against ongoing assault. Too much of this and the person loses track of himself. He complains of feeling disconnected. In this case, the conversation with the therapist—the authentic interchange, the back and forth of expressing, hearing and absorbing one's expression, watching the impact of one's expression, taking that impact back in to fill out the fullness of one's expression—is crucial in mending the patient's experience of disconnection and fragmentation.

When the therapist can pay close attention to regulating the fullness of the conversation, so that the patient can absorb what is happening rather than being flooded by it, then the patient finds himself not simply telling, reporting or rattling off a story; he suddenly experiences what it is like to be connected with himself in the telling. Sustaining this connection, through the other, with oneself, creates an experience of living through the story, of staying (becoming) intact while living through something real, rather than either simply recounting a distanced tale or becoming lost and swallowed up in a nightmare. We teach the patient, through modeling, how to track his internal signals of imminent flooding. We teach him, through modeling, how to slow down and ground himself in the face of those signals. The patient then develops confidence in being able to create the safety and pacing necessary to stay whole (and/or restabilize) through the experience of perceiving and remembering. That confidence allows the patient to risk exploring more, and revealing to self (through revealing to therapist) more of the hidden parts with their details, until a fuller and fuller sense of self becomes experienced and known. All of this creates new structures within

the patient so he is better equipped to stay fully present in moments of present-day reality and relationships without the constant scanning and hypervigilance that are part of disconnection. Being fully present within himself then allows him to become more open to life—thus allowing energy, vitality, and a sense of connection to flow.

These thoughts, about how relationship, conversation and connection form the crucial medium through which internal structures are built, particularly for patients with trauma histories, are why I, though an analyst, would hesitate long and hard, and search for a reason to put a person with a trauma focus on the couch. Schore (1996) speaks of the import of visual gaze as the key portal through which the infant takes in the pleasure and interest of the caretaker—the core ingredients necessary for emotional attachment—which is the core condition necessary for forming (via ongoing mutual attunements) the frontocortico-limbic connections in the brain necessary for being regulated and stabilized emotionally and biologically.⁵ How, then, can we not use gaze as a vital medium through which we do the stabilization and structuralization work of trauma? Maintaining the intensity of face-to-face work is more emotionally demanding because the reverberations within the mutual visual input amplify intimacy. However, when face-to-face, the therapist can track more of the micro-movements across the patient's face for attunement, and the patient can absorb the therapist's nonverbal cues to track honesty and authenticity and to grip concrete, sensory markers of presence when needing grounding.

27.3.14. Specifics of hypnotic technique

Dr E. and I don't seek out traumatizing memories to go over in the sessions. I have not used hypnosis to allow access to rooms and hallways of the past. I have not used hypnosis to slow intrusive flashbacks down, creating techniques of mastery over memories that are flooding him too quickly (e.g. Peebles, 1989). This is not where

⁵ 'The mother's emotionally expressive face is, by far, the most potent visual stimulus in the infant's environment' (Schore, 1996, p. 61).

Dr E.'s treatment has been taking place for now. Instead, Dr E. lives out after-images of his traumatic memories in his current relationships outside the sessions, and within the sessions he lives out the ways he learned to self-protect (the sophisticated dissociation). Neither is done within his awareness. So I try to help him become aware of what is taking place—not judgmentally, but with understanding. I understand aloud with him that this is the way he has lived, and that there has been good reason for it. However, simultaneously, it has been this way of living that has left him feeling disconnected. I believe it is the understanding, and the staying-with him relationally, that have been opening the door for him to risk episodes of slowing down with me—to the point that he has had moments of experiencing the connection, and it has soothed him. He has been delighted, surprised and made anxious by this unfamiliar feeling of feeling soothed in a relationship with another. It is here that I have been using hypnosis.

More specifically, when I find a way, usually after repeated attempts, to break into his racing delivery of life's details from the week, I self-consciously seek and hold eye contact with him. The eye-gaze is a natural form of induction. It is natural because it is biological—the infant's most potent way of taking the world in, the basis of attachment, that in turn is the medium in which regulation is transmitted and learned (Schore, 1996). Once Dr E. slows down enough to stay in the eye-gaze, I slow him down further by pacing (matching first the rhythms of his breathing, moving, speaking), then gradually slowing down the pace—of my rhythms of speaking, moving, phrasing—all the while intentionally holding firm with the connection of eye-gaze, until he begins to slow more, physiologically and mentally. I can actually see his face relax, and the coloring shift to a more even, fresh pinkening (rather than an unnatural, rough, angulated redness or a flat, blanched quality). His eyes seem to relax into an open taking me in. I attend to my language, seeding what I am saying with metaphors and sensory detail about concepts I believe would be helpful to him. For example, in a basic way, I might say, 'And just notice how it feels ... to slow down ... in this way ... everything calmer ... than it was before ... and how that feels ... and that feels

good, ... doesn't it'. The message is one of noticing what he is feeling physically, noticing the pleasurable sensations of soothing within the slowing down and how that contrasts with the speeding up, attending to this as an alternative to his other templates for connecting, and realizing the safety of its being within his control, its being within him to replicate and its being a source of hope for his longed-for connection with himself.

All of this is done without designating the experience, with Dr E., as a formal induction of trance. Hypnosis has never been mentioned between us. But I am aware (usually a second or two after I have naturally begun to use it) that what I am doing is inducing and deepening a trance experience to amplify, model and thus teach an experience of self-regulation within Dr E. The moment I become aware that I have moved into a hypnotic space with him, I can then move intentionally, and allow (even foster) a trance experience to develop. My awareness that trance is taking place allows acknowledgment of Dr E.'s heightened receptivity. In response, I can provide experience-near focusing that may help solidify the neurophysiological shift contained in Dr E.'s experiencing, and learning to effect independently, safe self-regulation. For example, I may say (carefully maintaining eye-gaze, a slowed-down tempo and a pacing of rhythm and inflection), 'And you see, this is what it can feel like, being slowed down, taking someone in ... see, how you can feel exactly what you are feeling right now ... how you can be connected ... with yourself ... with what is happening ... with your breathing ... in ... and out ... just notice ... that's right ... and ... it's ... ok'. It is too early in Dr E.'s experience with these kinds of moments for me to add metaphors that extend his awareness beyond focus on the concrete sensations in the moment. However, as his familiarity and comfort with this kind of connection expands, comments such as, 'Like the healing warmth of sunlight on your face, the gentle listening of a trusted other can allow you to slow down, breathe in, and feel the fullness of a deep experience of safety and comfort', would be possible.

I appreciate that the use of informal induction and natural trance is controversial. My own hypnosis training was initially from an ego

psychology, not Ericksonian, point of view, and for most of my career I was adamant in my conviction that trance induction should be named and agreed upon explicitly between client and clinician before proceeding, primarily believing that not to do so bypassed the patient's autonomy and choice, was thus disrespectful and potentially manipulative, and risked crippling the patient by fostering dependency on an amplification of the positive transference. In my practice, however, I have come to see that trance-like elements are always there (particularly when there has been trauma). To disrupt them abruptly is artificial and sometimes merely an expression of my own anxiety about so much receptivity in my patient. Gradually, I have come to utilize those moments therapeutically, as an opportunity sometimes to reach a patient who may be racing beyond verbal reach and can only be touched experientially through the implicit experience offered in trance. Or, an opportunity to solidify and/or mimic what developmentally is normally provided at a largely nonverbal level. Or, an opportunity to amplify and expand the patient's capacity to track internal cues and details and resonances from external communications. And always the thrust in my use of informal trance induction is in expanding the patient's own capacities and in emphasizing the locus of control within him, so that he can eventually initiate and replicate on his own the safe experiences he has in the office with me.

27.3.15. Creating new templates—commentary

When a person has lived through prolonged traumatic experiences of a relational nature, relationship itself becomes a trigger, or conditioned stimulus, for expectations of disruption and destabilization. The person naturally braces herself in the face of closeness. Different people brace or self-protect in individual ways, utilizing the personality strengths that are theirs. Accompanying this bracing, is its natural and necessary partner, hypervigilance. With hypervigilance, the person scans the experience of closeness for the least sign of imminent or far-off disruption. The person crunches the interpersonal data to anticipate what will happen as a way of creating the illusion of control over

relational safety. However, anticipations of the future are faulty truths because in actuality they can only be reflections of the past. Further, anticipations of the future ironically tend to create the very condition that is being feared since anticipating something will happen leads a person to act in ways that actually shape the relational unfolding towards the anticipation itself. Thus, anticipations lock one into repetition.

Real control lies in the confidence in one's capacity to live through, without destabilizing or fragmenting, whatever a relational moment will bring. However, that kind of confidence can only be built, over time, through repeated experiences of mastery. It can feel nearly impossible, but suspending anticipations and living in the moment is the natural antidote and a core component of forging new relational templates. In psychotherapy, living through the moments of relationship with the therapist and the moments of remembering the past constitutes the application of and testing ground for this concept. Self-regulation, even as basic and concrete as breathing in and breathing out and, through this, feeling one's body as steadily there, thus solidifying the knowledge that one's self remains intact and steadily there as well, is an essential tool for grounding oneself through disruptions. This type of self-regulation is so compatible with self-hypnosis that the two are easily thought of as overlapping domains in a Venn diagram.⁶

27.3.16. Toward stabilization

Dr E., like many high-functioning individuals with a trauma history, has self-regulated by not feeling what he is living. His natural, default position has been one of self-protection via sophisticated forms of dissociation. The cost has been that by doing so, he has also kept intimacy and closeness at bay, extinguishing the chance to feel alive in the moment with other people. The result for him has been a life lived predominantly in agitation punctuated by highs (that are often merely outbursts of overstimulation) and lows that bring him in unexpected touch with an

⁶ I am indebted to Nick Covino, PhD (SCEH Annual mtgs, Charleston, SC, November, 2005) for quoting his mentor as stating that there are few complex concepts that can't be illustrated by a Venn diagram.

abysmal inner aloneness. Missing appointments, coming late, talking so rapidly without pause that I have difficulty being let in, not remembering links that we have previously constructed together, have all been ways of trying to self-protect and self-regulate by severing connections ('diss'-tancing, 'diss'-associating—see quote below). My job has been one of listening, through the density of his speeding-up, through the fog of his induced dissociation, for where he is inside. My job has been one of finding him, and helping him feel safe enough to follow me back to the self in him that I found. And I have used hypnosis, via informal trance induction, to augment this. All of this I have considered the work of stabilization within an essentially trauma-focused treatment.

I disavow and disown. I deny and dismiss. I ignore and avoid. I even pretend and distract. Sometimes I do these things without realizing I do. And when the chips are down, and these other things fail to keep my Self safe, then I diss-ociate; I depersonalize, derealize, and forget, or I confuse When I am Diss-ed via Dissociation, then "I" am safe in my lostness, my safe numb protectedness. And this is true until I grow much older and there is not so much need for lostness and nothingness of being. Then I may find myself in pain over my numbness, and long to be alive, fully alive, essence-ially speaking, that is (Chefetz in Chefetz and Bromberg, 2004, p. 426).

27.3.17. Dr E.: outcome

Dr E. has remained in psychotherapy. He cancels about 20 percent of his sessions and is up to 15 min late for half of the remainder. When thinking about the lateness and cancellations, one must remember that Dr E. is the kind of man who would easily not come at all if he weren't relationally connected with me in some way; it would be easy for him to terminate indefinitely, citing scheduling complications due to his busy medical practice. Thus, I view the uneven attendance as opportunities to track and listen to his communications of anxiety about trust and interpersonal danger.

Dr E. can momentarily fall into a dark space in which he feels isolated and teetering on the brink of hopelessness. However, he has not gone over the edge into suicidal ideation, and his risk-taking behaviors have diminished considerably.

He has been followed by the original referring psychiatrist, and went through a trial of anti-depressant medication; however, he discontinued this medication on his own after 6 months because he couldn't feel it helping in any way and he did feel it interfering with sexual functioning. He is able to sleep longer at night without awakening; however, several times weekly, he fights going to sleep for several hours past the time he first felt tired.

Finally, Dr E. broke off with a woman he felt intensely drawn to but who was demeaning, belittling and unpredictable. The woman he is with now is smart and responds emotionally to him, without judgment or harshness. He is confidently sexual with her. However, he has a gnawing discomfort, as if there must be something better than this. He feels a spark is missing. He makes next to nothing of his sexual confidence with her, stating it is only because he is in control and she is in love with him. I persistently notice with him how drawn he is to women with sharp-edged intensity and put-downs; he uneasily sees this, but can't give it up. He says the adrenalin rush of the unpredictable feeds something in him. This latter is a common feeling in people with a history of trauma-induced, chronic dysregulation. I will be helping Dr E. appreciate this as a conditioned neurophysiological response to originally toxic conditions, so that he can learn to track and protect himself from continued, self-induced re-traumatizations.

As the work of stabilization continues and solidifies (and if Dr E. remains in treatment), he will be readier, and in a safer, more predictably self-regulating place, to tackle remembering, with connection to feelings, some of his original, traumatic, familial situations. At that point, trance will be used in the sessions (but now internalized, from our previous work, as his own self-hypnotic techniques) to regulate and gain control over unexpected moments of flooding, disruption and destabilization caused by the remembering-with-feeling (as opposed to the remembering-with-dissociation). Multiple repetitions of such experiences of mastery, over whatever time is needed, will strengthen Dr E.'s capacities, and confidence in his capacities, to live through feelings, life and relationships more fully aware. Meanwhile, interweaving these experiences of mastery and stabilization

with experimentations in daily life with new ways of relating with others, thinking about the world and connecting with himself will be the work of developing the new templates inherent in the integration aspect of trauma-focused work. And this is how a literal, neurophysiological, neurochemical and neuro-associational (if not neuro-structural as well) ‘rewiring’ takes place in relationally based, long-term, trauma-focused work with someone with complex trauma.

27.4. Case 2: Mrs Larchton

27.4.1. Background

Mrs Larchton is a feisty, creative woman of 59 years who had been in several treatment processes at difficult junctures in her life. A few years before seeing me, she had been in a long-term process of 8 years (once to twice weekly), for help renegotiating healthier relationships with her two adult children and her husband. Mrs L. had a childhood pockmarked with significant trauma. Her father had been convicted of murder and sent to prison to await the death penalty when Mrs L. was less than 2. However, the mother had told Mrs L. that her father had joined the navy and was deployed in a series of lengthy, classified missions. Secretly, the mother divorced her husband, and moved herself and her daughter from North Dakota to California, all the while continuing the myth that the father was contributing to his country and one day would return home. For years, the girl believed this. She waited for his return. Even after her brain told her it couldn’t be true, she continued to believe, because she hadn’t learned what else to do.

Mrs L.’s mother was an alcoholic, often irrational and unable to get out of bed. Mrs L. had to buy groceries and fix the meals. Her mother continually berated her, calling her selfish and only interested in her own needs. At an early age, she was sent to a convent school to board. There she was the youngest girl, and the older ones had little to do with her. However, the school provided stability, and when the nuns called her in at age 14 to let her know her mother hadn’t been paying tuition for months, Mrs L. was stunned and frozen. This could not be true. She lied to the nuns and made up a story about how the money was really there but

had been tied up in hospital bills. She then went out and literally begged, borrowed, stole and worked (surreptitiously) to pay her own way at the school. She married at 19, to a man who was (in retrospect) mentally unstable with probably an atypical psychosis and sociopathic tendencies. He physically and verbally abused her, and later sexually abused their child. She broke from him, tumultuously, when she could, and married a stable man. Her second husband was significantly slower than she intellectually—which created its own problems—but he was not abusive.

Mrs L. was noticeably intelligent and quick. Her capacity to register visual details and sensory input of tones, colors, facial expressions and nonverbal rhythms was a gift and a burden. Because of how much she took in, she was easily overstimulated. For example, after weeks of unstopped immersion in her work as a writer, she would physically collapse, unable to get out of bed, spent, without energy and often in physical pain. Or, she would plan elaborate trips, only to go and become overwhelmingly flooded by all the sights, sounds and sensations after a few short days. In her previous individual and group therapy work, she had discussed and processed all the details of her life. However, interestingly, the concepts of overstimulation, difficulty self-regulating and probable traumatization were not ones with which she had emerged.

Mrs L. was referred to me by her most recent, previous therapist. Mrs L. had been offered the opportunity to give a lecture at a local university on one of her books. She was enlivened by the idea, but almost to the point of paralysis. She couldn’t imagine being able to speak in front of people. She was an exquisitely alive and energized woman, alert to people around her and capable of engaging with vitality and wit. However, simultaneously, she froze with intense, physiological panic when asked to speak publicly. Her previous therapist knew I did work with hypnosis. Since Mrs L. was asking for help with a circumscribed symptom (public speaking anxiety); since she had already completed several episodes of lengthy therapy; and since she was talented in imaginative involvement and intrigued by the idea of hypnosis, her previous therapist referred her to me for a brief piece of work utilizing hypnosis to target her speaking anxiety.

27.4.2. Mrs Larchton: formulation

Mrs Larchton's history clearly lent itself to a formulation about complex trauma. However, she had already undergone extensive treatment that in sum total addressed the details of her upbringing fairly comprehensively. Put differently, she had processed memories of her past, linking them to symptoms and behavior in her adult life, which allegedly had enabled her to move on with a fuller and more rewarding engagement with the present. Where then was one to place her symptom of public speaking anxiety?

What shaped my response to this question was Mrs L.'s clinical presentation with me in the initial few sessions. Periodically, Mrs L. talked and thought in rapid arcs of associations. The emotion would intensify until the room filled. It felt like an emergency was exploding and the way out was, alarmingly, shrinking fast.

Unlike with Dr E., with Mrs L. I was far from numb. While she fast-talked, I became electrified, on pins and needles, and my stomach twisted in ever-tightening knots. My muscles locked in tension, and I was intermittently forgetting to breathe. I forced my mind to listen carefully. On the surface layer of words, Mrs L.'s description of her public speaking anxiety was informative and relevant; but just behind the word layer was surging undeniably escalating noise. My body was hearing that noise, and it was the noise behind the words that was agitating me at a physical level. It was then that I began to notice Mrs L. was beginning to loop over and over again through variations on a scenario of doom. She sounded frantic. I also noticed that my clarifying and pragmatic problem-solving interventions were not bringing her relief; instead, they were having the same effect as pouring gasoline on a rapidly out of control blaze.

As it turned out, Mrs L. was being sucked into a past space of trauma, without either of us initially knowing it. Overtly, she was talking about how her speaking anxiety became worse if she felt she could not leave the room. However, internally, she had inadvertently slipped into the distant past. I first heard it in the mounting panic of her voice. Then I realized it was in her eyes as well. They were slightly off focus and glazed; she wasn't fully taking me in. She was hearing the

words I was speaking in the now. (When I asked her to, she could repeat them back to me.) But emotionally, she was responding as if it was then. My tone, presence and ideas were not having impact; they were not sinking in.

27.4.3. Sophisticated abreaction—commentary

As explained earlier, symptoms of intrusion and avoidance can be blatant or more sophisticated (see p. 64). With sophisticated intrusive phenomena (which I think of as sophisticated abreaction), the patient may begin unexpectedly escalating in intensity and pressure that don't immediately match the content. He may jump rapidly among details, his voice tone swelling with urgency, but his words insisting that control and logic are holding sway. The therapist's physiology, with or without the therapist's awareness, may begin to match more the patient's actual physiology rather than the patient's stated control. For example, the therapist may begin to speed up autonomically, tightening and thus internally mirroring the patient's pressure and urgency. Perhaps, in response to the autonomically signaled sense of emergency experienced at a subliminal level, the therapist may find herself jumping to offering directives, re-establishing focus or concretely problem solving. However, at such times, the patient typically shows neither relief nor calm in the face of this effort at pragmatic problem solving; instead, his agitation can escalate further. Worse yet, a certain repetitive quality can begin to take hold, as if the patient is running the same loop of tape over and over, the urgency escalating with each looping. Neither the perseverance nor the seeming help rejection may match the patient's intelligence, his usual ability to work collaboratively or his capacity to step outside the box and reflect.

If the therapist is able to pause mentally at such junctures, and carefully listen, she may hear how urgency itself is driving the communication, more so than the story's particulars. If this is the case, it can help at such times for the therapist to suggest that both patient and therapist pause, slow down, and begin listening together to the way the patient is communicating in order to hear more clearly what is trying to be said. In slowing down the pace, sometimes it becomes possible to isolate

when things began to change. By ‘working backward’ in this way, therapist and patient identify the trigger(s).

In sum, qualities that signal the possibility of a sophisticated abreaction are (1) the patient’s inability to slow down or disengage from what he is saying even when the therapist tries to interrupt; (2) the patient’s reiterating his story, repeating phrases and questions over and over despite the therapist’s attempts to answer; (3) the patient’s steady escalation of intensity and anxiety; and (4) the lack of decompression or resolution even with multiple intervention efforts. Interestingly, these same qualities characterize children’s traumatic play (Terr, 1983, 1988).

Triggers

Trigger is another word for conditioned stimulus, and the behavioral principles of classical conditioning are the same: a certain perception, sound, smell or emotional fragment is similar enough to aspects of the originally traumatizing experiences that it propels the patient into an unexpected and unwanted abreactive experience.⁷ Remember again that, clinically, abreaction is not simply about dramatic catharses in which one loses a sense of one’s immediate surroundings. An abreaction can be sophisticated enough to pass beneath the radar screen of identification. It can be a sudden, volatile tongue-lashing of a store clerk, or turning on a dime to cut off a relationship. It can be an engulfing mood state that descends precipitously—a neurochemical ‘signature’, if you will, from the originally traumatizing events (e.g. LeDoux, 1992).

When the intensification of a sophisticated abreaction occurs, there has always been a trigger. This trigger, or conditioned stimulus, initiates its conditioned response—a rapid neurological release of neurochemicals and sequencing of neuronal firings along practiced associational pathways. These brain events are responsible for the subjective sense of re-experiencing aspects of the originally traumatizing events. Sometimes, such ‘emotional memories’ can come upon one so quickly, with so little sense of volition or conscious context, or internal experience of continuity in one’s subjective

experience of Self, that a feeling of ‘not-me’ (Chefetz and Bromberg, 2004) occurs.

27.4.4. Mrs Larchton’s sophisticated abreaction

Mrs L. was caught in a sophisticated form of abreaction. She was not in touch with who I was; she was not using the present verb tense to describe distant events; she was not even explicitly speaking to her past. However, she was emotionally escalating, autonomically quickening, looping unbrokenly through identical questions and detail, having difficulty disengaging from the topic, and worsening rather than calming. Mrs L. had been triggered.

When several clear, normal-toned efforts to redirect her failed, I called upon my hypnotic training in re-alerting people from trance. I self-consciously used a firmly edged, more commanding voice, with slightly deeper tones. It was my voice for the final numbers of counting people out of trance. I called her name, twice. She shook her head slightly, as if alerting. I asked her what happened. ‘What do you mean?’ she asked, confused. I reviewed the last couple of minutes, pointing out that she seemed unable to slow down, even when I had asked her to. She laughed nervously, saying that sometimes she erupts, ‘like Mount Vesuvius’. When this happens, she doesn’t know how to stop it. It takes her over; she often doesn’t catch it coming until it is already there. We sorted the beginning of the moment out. The trigger seemed to be describing her inability to escape the room when publicly speaking. Connecting with the feeling of being unable to escape in the present was the conditioned stimulus that propelled her into the mother’s room of her childhood house in the past.

I commented on her loss of distance and the power of her feeling memories as she returned to that room. Mrs L. was fed up. ‘I mean after all, with all the therapy I’ve had, for all these years, you’d think these things would be dead and buried!’ she fumed. I reassured her that her years of therapy would prove invaluable bulwarks against full-blown re-traumatization. However, I focused in on one leftover aspect that apparently had not been much dealt with: her vulnerability to sudden triggering and subsequent acute dysregulation.

⁷ The terms, abreaction, flashback, reliving and re-enactment are all essentially descriptive of intrusive phenomena

Thus, my formulation was that while Mrs L. had dealt with gutsiness and perseverance to overcome a scarring childhood via the understanding wrung from psychotherapy, her capacity to self-regulate had remained in weakened form. She had never named this vulnerability within her anything other than her Mount Vesuvius. Her mother had called her an 'overly sensitive' child, and certainly she had been gifted in this world with finely spun sensitivities. However, what she had not appreciated was that, whatever her innate sensitivities had been at birth, she had been later sensitized by life's events to living within inches of neurophysiological dyscontrol. I was happy to take her on and teach her hypnotically mediated techniques to regulate her public speaking anxiety. But as I did so, I would be mindful of the larger picture of complex trauma-induced dyscontrol, and I would weave in implicit metaphors and explicit explanations designed to help with both focal symptom and big picture alike.

27.4.5. Mrs Larchton: treatment plan

I suggested we meet weekly for 6 months prior to her speaking engagement, and then, if all went well, we could taper to every other week at that time. The intent was to make this a reasonably time-limited treatment and to taper off to termination as her specific goals were met. We agreed to use hypnosis, with formal induction, within most sessions, and to utilize the practicing of specific self-hypnosis assignments between sessions to augment the face-to-face work and solidify her gains.

27.4.6. Mrs Larchton: treatment

Mrs L. was quite visually gifted. She was able to move quickly into trance with simple eye closure and counting. She could create and become absorbed in vividly imagistic spaces with rich, sensory detail. We used a combination of hypnosis, breathing techniques, recognition and exploration of negative therapeutic reactions, and pragmatic organizational and problem-solving help. All of this was offered within the context of a relationship that provided an experience of attunement, regulation, interest, undaunted constancy in the face of her intensity and a generous supply of intellectual explanations

of why her symptoms occurred and why what we were doing worked. It is impossible to separate the powerful regulating effects offered implicitly within the texture of the relationship itself from the explicitly given circumscribed tools and techniques. Nor does one need to; both are essential, inextricably intertwined and interdependently potentiating of each other.

In the first few sessions, we used a version of systematic desensitization, within trance to master the autonomic hyperarousal associated with public speaking. We devised a hierarchy of increasingly agitating details of the public speaking, and moved slowly up this list from less to more intense items. Using a SUDS (Subjective Units of Distress) scale, we tracked Mrs L.'s sense of panic. When we moved to a more uncomfortable step on the list, we utilized calming imagery, with vivid sensory detail, until Mrs L. mastered that step as measured by lowering her SUDS to a 2 or 1. One of her favorite calming images was that of a waterfall. The way the waterfall formed a sheet of water filling her visual surface; the way the sound could fill her ears; the way the water could become all-consumingly opaque or nearly transparent as needed; and the way the rushing of the water could wash and cleanse were all aspects that were utilized at different times and for different purposes. Initially, Mrs L. was delighted with the rapid, immediate and concretely felt results achieved by the hypnosis. Her experience of coming into the session agitated and leaving calm was a powerful ratification for her of the effects of trance.

By the third session, however, she began to experience glitches in the effectiveness of the hypnotically mediated suggestions for calming. The waterfall image did not immediately restore her sense of well-being and she panicked. Soon after, every imagistically mediated metaphorical suggestion started twisting into something that felt harmful to her and raised her panic. For example, the waterfall faded. The colors of the beautiful garden became muted and dull, as if things were dying. I used a split screen technique with the suggestion of her waterfall imagery on one side and an image that captured what was bothering her on the other side. I then suggested that the two images begin to merge, layering one on top of the other, and asked her

to describe simply what then happened, in her and in the images. She described a dark, brown, craggy mountain as her threatening image. However, when the waterfall merged with the mountain, the mountain crowded out the water and stuck in the way of any sense of peace.

At this point, because her panic was mounting instead of declining, I had Mrs L. immediately turn off the imagery and emerge from trance. Face to face, maintaining eye contact with her, I named and educated Mrs L. about her having shifted into a panic mode. We went over, from different angles, and with different words, the contrast between her receptive state in which imagery helped her and was benign, and the panic state, in which imagery suddenly turned sour and attacked her sense of well-being. I wanted her as an ally in noticing this shift whenever it occurred so that we could immediately avert its typical, rapidly out-of-control, downward spiral into panic.

27.4.7. Catching and reversing sophisticated abreactions—commentary

It is important to recognize and interrupt the traumatic ‘play’ aspect embedded in the verbalizations of adults for several reasons. First, like with any form of uncontrolled abreaction, the repetition of the cascading of emergency neurochemicals and the behavioral manifestations of ensuing panic maneuvers signal and intensify each other, serving further to ‘burn in’ (reinforce the conditioned response of; lower the threshold for) the neuronal firing along the neuro-associational pathways of the traumatic experiences. In short, as we all know, uncontrolled abreaction is psychologically and neurologically damaging.

Second, while in that state of sophisticated abreaction, the patient’s capacity to process information is altered in counter-therapeutic ways. Because this is a sophisticated abreaction, without dramatic flashback qualities, it is easy to assume the patient is continuing to track and reason with us in his usual, cognitively mature ways. However, more often, a mini-cognitive regression is occurring. Symptoms of cognitive regression include: (1) hyperalert amplification of perceptual details of intonation, inflections, facial expressions; (2) however, simultaneous, constricted perceptual focus, resulting in selective

(and sometimes distorted) memory for what is being said or occurring; (3) diminished ability to take in complexity, meaning an increased vulnerability to black and white thinking; (4) temporary loss of access to expectations of benevolence; (5) heightened expectations of attack that can create the mental experience of attack when allowed to persist with prolonged, unmitigated intensity; (6) difficulty achieving perspective or making links between ideas; (7) cognitive rigidity (i.e. difficulty shifting sets). In short, the frontal lobes are not as effectively engaged as usual; therefore, they don’t as easily temper and contextualize the patient’s limbic firings.

Within such a state, although the patient’s vocabulary, logic and eye contact may appear unimpaired, the silently occurring cognitive regression described above is inhibiting his ability to reason outside the past he is reliving. This is because the trauma memory contains not simply events, but also the quality of the neurological processing that was taking place during those events. Both are welded together, encoded as one package. The ways of reasoning and regulating and feeling that occurred at the time of trauma leave a unique neurobiological signature, that is reread by the brain and body when reliving occurs. Thus, the patient emotionally and logically reacts inside the panic of the then, rather than outside, with the logic available from the now. This is one reason why the patient can feel difficult to reach during even a subtle reliving. The therapist’s attempts to ‘talk’ about actual versus feared danger, about the difference between perceptions and conclusions, or about the possible inefficiency of the patient’s problem-solving efforts may do little more than escalate the patient into more agitation. This can be confusing, to therapist and patient, until the experience is identified as a sophisticated abreaction.

Neurocognitively speaking, learning is impaired during this type of cognitive regression. Information isn’t being registered accurately; linking and organizing mechanisms unravel; and memory is severely disrupted. Clearly, the patient needs to move out of this neurological state to have a chance of doing something productive with it intellectually. Consequently, when the therapist recognizes the patient has fallen into the regression characterizing a sophisticated abreaction, the task becomes one of helping the patient shift and engage alternative modes of cortical functioning. The patient having repeated experiences of catching the regression

in reasoning and successfully shifting out of it strengthens her confidence and psychological ‘muscle’—both necessary for intentionally accessing trauma memories.

Accessing implies the ability to come and go. Accessing allows feeling the traumatic experience from the inside of it, but describing it with the mental capacities that lie outside it. Accessing is emotional remembering, rather than reliving. It is from this place of accessing, rather than reliving, that the work occurs of reorganizing traumatic memories, constructing words, creating context, integrating splits in the Self, and experiencing healthier relational connections—all of which open up new trajectories into the future.

27.4.8. Course of treatment

Because Mrs L. had the advantage of some solid therapy under her belt, she could move easily with me into the mode of exploring and connecting dots—in this case, figuring out what was that mountain that was stubbornly blocking her waterfall. Images of her mother came to mind, and she found herself vividly hearing (mentally, not literally) her mother saying things like, ‘You’re sick; You can’t do it; Lie down and rest; You’ll fail’. Instantaneously, these words lit up life-long messages from mother of, ‘Stay with me ... I’m crippled; you need to take care of me ... You’re selfish if you get better and leave’.

We spent two sessions like this, first solidifying how to recognize and reverse the shift into the downward spiral of abreactive panic, and, second, constructing the words held within the image of the craggy mountain. Armed then with both a strengthened capacity to reverse abreaction collaboratively and some clues as to why the abreaction had occurred, we approached trance again. This time, when the waterfall weakened and the craggy mountain appeared, I had the patient picture her mother on a TV screen speaking the words she had heard her speak when out of trance. I had the patient focus on the separateness of her self watching the television, and her mother on the screen. I had her use the remote control to turn down the volume, switch channels, mute and turn off the set. Throughout this imagistic exercise, I emphasized the link to Mrs L.’s control, over letting in or keeping out, the words and power of her long

ago passed away mother. After working in this way, the mountain diminished and the waterfall flowed once again.

The next glitch occurred a few sessions later. Once again, her images seemed to shift and change out of her control. The beautiful reds of flowers began to look like blood. The warm sun in her imagined garden dimmed to grayness under the press of clouds. Once again, I moved her out of trance to slow the pace down and help her regain intellectual control so that she could then regain emotional control. She talked in passive voice about the images changing. I emphasized how they were *her* images, and she could control what they did. I did not say the rest of what I was thinking just then; namely, that I was encountering a leftover trauma-induced characterological trait of occasional passivity and paralysis in the face of seemingly overwhelming events. I chose not to say it because at that moment, to Mrs L., my insight would have been only empty words. Instead, I worked, hands-on, with this insight in images; as long as Mrs L. wasn’t caught in a rapidly spiraling downturn, intervention through images often reached the inside of her more efficiently than abstractions and words. I used a couple of quick, eyes-open exercises of picturing the red flowers, turning them to blood herself, then turning them back to a beautiful red. Similarly, with the image of the sun, I had her isolate just that picture, dim it then bring it to life again. I emphasized as she did these things that she was in control of the images she chose to let in and the ones she chose to keep out. My guiding principle was substituting the mastery of now over the passivity of the traumatizing past.

The next session we moved back into trance, and Mrs L. developed a more detailed image elaborating the practice from the session before. She saw herself in an intriguing museum. In one marble-floored room, there was an arresting sculpture, taking up the entire length of the room. It was an immensely disturbing depiction of burdened people, leaning on each other, melting, with distorted features. She was standing in the archway bordering this room. From this vantage point, however, she could also look left into a second room. The wall of this room held a vast picture window that consumed the entire wall. Through this window, one peered

into a lush garden bedecked with exotic, graceful and delicate orchids. Mrs L. could consciously choose to turn away from the melting, grotesque sculpture. She could also consciously choose to turn towards and walk into the room with the window of orchids. This scene became pivotal imagery to which we returned and referred throughout our work together. It graphically condensed the message that while she had not had control of what happened to her as a child, she did have control now over what she chose to move towards, let in and dwell with.

Meanwhile, the hypnosis work targeting Mrs L.'s speaking anxiety was continuing, hand-in-hand with practicing deep breathing exercises and experimenting with practical suggestions for concrete behaviors outside the sessions (e.g. utilizing online search engines to research her talks; practicing the art of engaging the audience with questions that forward the thread of her discussion; developing plans for 'escape' should she feel queasy or physically in pain).

The final glitch in the smooth running of the calming effects of hypnotically mediated imagery emerged as Mrs L. started to notice the positive effects of the hypnosis generalizing to situations outside the consulting room. She said she didn't want to think about or tell me how much the hypnosis was working because she didn't want to jinx it. I inquired further. She became anxious and out of her spilled her long-held conviction, cemented by early experiences, that good things never last. Over several sessions, we became more familiar with the intricacies of this conviction. Having lived through deception and abrupt and devastating discoveries of loss, Mrs L. had concluded long ago that nothing good lasts. I introduced her to the idea that her conclusion had been understandably self-protective. It had prepared her for the worst (even though it had robbed her from fully experiencing the best). I pointed out how nothing bad lasted either, and how what was truly beautiful and good was just as real as what was horrific and bad. I soberly reflected that both existed; both were real; both were true. Therefore, each could be felt in its entirety, without the conclusion that one was more certain, and thus, eclipsed the other.

As was her gift, Mrs L. developed imagery that captured this concept. In trance, she recalled

a tree she had recently been privileged to see on a glorious October day. As she was walking, she had suddenly been compelled to look up, and there, above her, in full canopy, was a sea of golden yellow, spreading across and filling her eyes, melting butter, warm honey, splayed against crystalline, blue skies. The image was breathtaking to her in its beauty and perfection, and purity of form mixed with color. This forever became her visual reminder that those moments of beauty have just as much right to fill the sky as the moments of awful loss. Both are real. She had felt the sensory fullness and detail of the tree. Nothing that had happened to her before or since could take that away. So she knew, at a concrete, sensory level that beauty did exist and was not wiped out by that which was bad. Thus, she could now consider concluding that good things could be felt, and in that way lastingly exist with potency inside her.

27.4.9. The work of integration—commentary

The integration aspect of trauma-focused psychotherapy involves reconfiguring what we used to expect as inevitable, by taking into account what we now have tasted as possible. As one 10-year-old patient put it, 'It's like throwing a thousand jigsaw puzzle pieces into the air and watching them land in a new picture'. Psychoanalysts have called this working through. Behavioral therapists have called it desensitization. Cognitive therapists have called it building new schemata. Trauma therapists have called it the phase of rebuilding shattered assumptions about the world, the self and others. With our increased success at integrating neurobiological insights with infant, developmental and trauma research, we can also call it a literal rewiring, at a neurological level, of automatic, associational pathways of neuronal firings in the brain.

Repeated experiences of safety with the therapist (and eventually with others in the day to day world as the patient risks new ways of relating) literally create new neurobiologically based templates of how relationships, self and the world can work. The old templates will always remain, ready to be activated. However, one's confidence in recovering from such activations can grow, and the new templates are created, both from these

experiences of recovery and from new experiences of engaging differently with life.

And, as with each aspect of trauma-focused therapy, the relationship is key. It is through the experience of seeing and hearing into the patient—of creating an experience of resonance inside oneself, of listening from within where the patient is—that one can begin to realize attunement, to the nuances, rhythms, language and emotional movements of the person who sits in the room with us. And it is through this attunement that we can help create the new neurological pathways, between frontal lobes and limbic system, for emotional regulation (Schore, 2003b) and, eventually, new associational transformations as well. As clinicians familiar with hypnosis, we do this naturally, simply calling it by different names ... attunement is the ‘pacing’ of which Ericksonian therapists speak; it is the entrainment of which neurophysiologists write. And once we pace, we can ‘lead’ (Zeig and Rennick, 1991). Once we entrain, we can shape the direction of the entrainment. Through the portal of eye gaze, and the vehicles of voice tone, language, inflection, cadence and self-regulation, we pace and lead the patient to calming, breathing, desensitizing fears, experiencing connection where there was previously isolation. This is the stuff of holding and containment that is essential for reworking trauma experiences, rebounding from re-livings, and rewiring the new templates that interweave new possibilities into the memories of old horrors.

Transference in trauma

The classic definition of transference is that one transfers one’s experience of key people from the past onto the therapist, thus perceiving and reacting to him as if he is similar to those key people. Embedded in the definition is the assumption that the perceptions of transference are distortions of the real person of the therapist. It is within the distortions, in the space between perception and ‘reality’, that therapist and patient discover the implicit details of the people in the patient’s past. As such, transference provides an opportunity to learn what memory cannot provide and words cannot describe.

Accurate perceptions

In working with trauma, transference happens and is invaluable in the ways described above.

However, there is more that is also essential. The patient doesn’t simply distort who the therapist is. Sometimes the patient accurately perceives aspects of the therapist’s selves inside the therapist, some of whom the therapist may be aware of and some of whom the therapist may not. The success of the work depends on the therapist’s willingness to suspend defensiveness, judgementalism and the evaluation of transference as distortions-only, and to consider where the patient may be right, not simply where the patient is wrong. This is always true, but it is particularly true with patients who have suffered complex trauma. This is because their sense of reality testing, interpersonal judgment and perceptual accuracy about when to trust is on the line. What is perceived, and the lack of permission to speak and react to what is perceived, often is a sticking point from the past that continues to imprison them relationally in traumatic templates. Thus, it is often only through permitting the therapeutic relationship itself to be a testing ground for ‘speaking truth to power’ (American Friends Service Committee, 1955) that allows patients suffering from complex trauma to have a chance of recalibrating their ways of testing the trustworthiness of relationships—ways that may have been warped from the effects of the past. The therapist’s willingness to engage fully in the relationship, her capacity to listen to, recognize and wrestle with/welcome back inside aspects of herself that are being reflected back to her, and her capacity to work (without losing perspective and a clear sense of whose needs are being served) in manageable, bounded pieces with the patient about his accurate perceptions all give the patient a chance to heal relationally in a deep way.

The structurally organizing power of ‘being with’

A key contribution to pathogenesis in trauma, particularly complex trauma, is the experience of isolation (not being seen, heard or known) when moving through overwhelming life event(s). For a child, isolation amplifies the sense of endlessness to the autonomic flooding. Further, when no one seems there and there is nothing one can do to stop anything, hopelessness becomes inevitable and a sense of future vaporizes (Terr, 1983, 1991). Therefore, one aspect of the repair of trauma is transforming that experience of isolation into one of connection (Peebles, 1989). The experience of

the therapist, as real and vibrantly there, becomes crucial in building structure within the patient. There are so many aspects to how relationship builds structure in psychotherapy (e.g. Greenspan, 1997; Baker, 2000; Westen and Gabbard, 2002; Gabbard and Westen, 2003; Schore, 2003b) that it is beyond this chapter to detail them here. A few examples of the kinds of trauma-relevant internal structuralizations and organization that grow from the continuity and containment of 'being with' the patient are: (1) transforming the terror of endlessness into an experience of circumscribed moments; (2) transforming engulfment, flooding and shapelessness into the ability to move in and out of frightening experiences and the ability to differentiate details within those experiences; and (3) transforming fragmentation into a capacity to know and hold the pieces so that one literally holds one's Self together. To reiterate, these kinds of structuralizations are possible only through fully experienced relationship. And these kinds of structuralization are crucial to making remembering, instead of reliving, possible.

27.4.10. Mrs Larchton: outcome

Mrs L. saw me for a total of 28 sessions over 10 months. She was able to give her series of talks successfully. This accomplishment further strengthened her internally as experiences of mastery always do. It opened the door for her to take other risks relationally and vocationally.

What has remained most lasting for Mrs L. have been her techniques and tools for enhanced self-regulation. She recognizes better when she is overwhelmed and does not call herself 'high-strung' or 'overly sensitive' as before. Instead, she reminds herself to take life in smaller chunks, and that slower and less may actually yield more for longer. Her efforts are not seamless. They are full of the discouragements and setbacks of normal life. But they now contain more chances for joy and risk than she was capable of before.

Occasionally, Mrs L. returns to work with me for a few refresher sessions. Her history of complex trauma is always uppermost in my mind as a context for whatever symptom or emotional struggle she may bring in. It is from that backdrop that I develop formulations for her symptoms. It is from that starting point that I choose whether to emphasize stabilization, brief reprocessing or a refresher on the integration of new

templates for self, others and the world. And it is within any of these places that hypnosis has always proved a valuable and potent tool to augment the work for her.

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CHAPTER 28

Hypnosis in sport: cases, techniques and issues

William P. Morgan and Aaron J. Stegner

28.1. Introduction

This chapter focuses on professional consultation with emphasis on key points derived from selected cases, along with techniques and issues involving the use of hypnosis in exercise and sport settings. Athletes, coaches and sports medicine physicians sometimes request hypnosis for performance enhancement, as well as for the restoration of previous levels of performance following compromise. A fundamental question in both cases involves the matter of actual capacity. For example, with endurance events, it is possible to assess the individual's aerobic capacity as measured by exertion on a treadmill or bicycle ergometer. This capacity, if measured properly, is not influenced by motivation and other subjective factors, but rather represents an objective physiological limit. The metabolic cost of the task can be accurately determined, and this value can be compared with the individual's measured capacity. The guidelines to be advanced will go beyond the speculative level to include actual empirical data gathered in case studies, as well as results from other case studies reported in the literature.

28.2. Earlier reviews

There are a number of case reports and research studies applying quasi-experimental designs to address whether or not human physical performance can be enhanced with hypnosis. The first of these was carried out by Clark L. Hull and his colleagues in a series of ingenious experiments performed over a 10-year period at the University of Wisconsin and later at Yale University. This programmatic research was summarized in a heuristic volume titled *Hypnosis and Suggestibility* (Hull 1933), with two chapters specifically addressing whether hypnotic suggestion enable individuals to transcend voluntary capacity. Hull concluded there is little solid evidence for hypnosis enhancing performance beyond volitional capacity.

A research literature review dealing with the influence of hypnosis on muscular performance by Johnson (1961a) confirmed the general conclusion reached by Hull (1933) almost three decades earlier. Johnson (1961a) pointed out that while popular opinion often attributes superhuman powers to hypnosis, and while certain individuals do experience marked performance gains under certain hypnotic conditions, '... the fact

remains that the controlled studies conducted to date do not present clear-cut or consistent evidence of heightened performance in the hypnotic or post-hypnotic states' (p. 2). Interestingly Johnson (1961a) noted that both hypnotic and post-hypnotic suggestions designed to impair muscular performance are much more likely to be successful. Later reviews by Barber (1966), Morgan (1972, 1980a, 1993), and Morgan and Brown (1983) were similarly equivocal. Barber *et al.* (1966) demonstrated that suggestion in the motivated 'waking' state was just as effective as hypnotic suggestion in the enhancement of muscular strength and endurance.

There can be little argument about the need to have experimental and control groups both exposed to everything except the independent variable (e.g. hypnosis) being manipulated (Garvin *et al.*, 2001). It is likely that in many studies hypnotic performance exceeded that of control because subjects in the hypnosis condition were more motivated than during the non-hypnosis control condition. Arguably then, the increment of hypnotic performance over non-hypnotic performance is not an effect of hypnosis *per se*, but rather the result of subjects in the hypnotic condition being more motivated, and exerting more effort.

Happily, in the case of maximal aerobic power discussed earlier, factors such as motivation, the inability or willingness to endure discomfort, and other subjective issues on the part of the individual being tested are ruled out because the criterion measure is defined as the point where further increases in workload (e.g. treadmill speed and/or grade) fail to result in an increase of oxygen uptake. That is, 'maximum' is defined as an objective physiological entity rather than the individual's subjective decision to discontinue. Unfortunately, most of the hypnosis research dealing with physical performance has relied on the use of tasks that are governed by the individual's subjective decision to continue or discontinue exertion. Examples would be strength of grip as measured by a dynamometer, holding of the arms in a horizontal plane with or without weights held in the extended hands, reaction time, treadmill running to self-imposed exhaustion, and so on. All of these measures are subject to numerous behavioral artifacts such as demand characteristics, experimenter expectancies, placebo effect, pact of

ignorance, pre-test sensitization and order effects (Morgan, 1997). Indeed Evans and Orne (1965) report an order effect such that the control/hypnosis order renders no effect for condition, but the hypnosis/ control does, with hypnosis performance superior to control performance.

It has also been recognized for a number of years that true maximal performance on such tasks is regulated in large measure by inhibitory mechanisms. These inhibitory mechanisms are regarded as protective since Gorton (1959) has reported that complications arising from electroconvulsive therapy (ECT) during its earliest years of application sometimes led to muscle contracting at forces so great that bone fractures, joint dislocations and ligament tears often resulted. In a classic experiment reported by Ikai and Steinhaus (1961), it was demonstrated that hypnotic suggestions, as well as other treatments (e.g. alcohol, amphetamine, loud noises) led to significant increases in maximal elbow flexion strength due to disinhibition of inhibitory mechanisms. This leads to the view that most tests of maximal muscular efforts are merely pseudo-maximums. These reports provide a compelling theoretical rationale for the efficacy of hypnosis in efforts to enhance muscular performance through removal of the inhibitory mechanisms that govern maximal efforts.

A third explanation for the inconsistent results in this research literature relates to the inadequate statistical power in many of the published studies that have produced equivocal or negative findings. Many of the studies in this area of inquiry have relied on small sample sizes in concert with the use of dependent variables characterized by substantial variability. A fourth explanation relates to the general failure in this research literature to consider individual differences. This is important since investigators have sometimes reported that an experimental group (nomothetic data) failed to improve, but one or more individuals (idiographic data) experienced phenomenal gains. Examples of cases illustrating this point follow.

28.3. Instructive case studies in exercise performance

Continuously tracking the symptom status of one (or a few) psychotherapy patients across

baseline and intervention phases can potentially yield data sets well suited to revealing whether, when and sometimes even why an intervention works. Peterson (2004) predicts, 'Databases grounded in the actual experiences practitioners encounter will provide a descriptive foundation for a science that suits the nature we are trying to comprehend' (p. 205). Peterson is not alone in this sentiment. Barlow and Hersen (1984), Bergin and Strupp (1970) and Kazdin (1982, 1992) have long noted that the practitioner-generated case-based time-series design fully qualifies as a true experiment, and that it ought to stand alongside the more common group designs [e.g. randomized controlled trial (RCT)] as a viable approach to expanding our knowledge about whether, how and for whom psychotherapy works.

Many of the early breakthrough discoveries of psychological science were products of single organism methodologies (Fechner, 1889; Ebbinghaus, 1913; Kohler, 1925; Watson, 1925; Pavlov, 1927; Skinner, 1938; for review see H. Morgan and R. K. Morgan, 2004). Skinner was a particularly strong advocate of single-organism time-series designs probably because they track what interested him most: when, how and under what conditions new behavioral repertoires unfold in real time. In his view, the dominant large-N paradigm in psychology and its focus on group means actually obscures the anatomy of change.

28.3.1. Remarkable case material encountered in group research

28.3.1.1 Example 1 (Johnson and Kramer, 1961)

Warren Johnson and his associates conducted a series of experiments at the University of Maryland during the 1960s dealing with the study of hypnosis and physical performance, and most of this research was summarized in a review paper (Johnson, 1961a). This systematic inquiry was characterized by the use of rigorous research designs, and this work avoided many of the shortcomings associated with earlier and later work in this field.

In the study to be summarized, for example, Johnson and Kramer (1961) evaluated 10 young, trained athletes. The experimental design consisted of nonhypnotic, hypnotic (deep) and

post-hypnotic (deep and light trance) suggestions on four different days prior to a battery of tests. The physical tests were designed to measure muscular strength (dynamometer), muscular power (jump and reach test) and muscular endurance. The latter test consisted of supine press of a 47-lb barbell that was lifted to the beat of a metronome to exhaustion. Hypnotic suggestion did not result in improvement on the strength or power tasks, but endurance improved significantly under all hypnosis conditions compared with the nonhypnosis condition.

Remarkably one subject, hereafter referred to as 'Charles', had such an enormous increase in performance following hypnotic suggestion that Johnson and Kramer (1961) elected to exclude his data on the endurance test (supine press) from the remainder of the group, and these data were presented as a case report in the manuscript. The nine individuals included in the nomothetic analysis had scores ranging from 35 to 55 on the four pre-study practice sessions. Charles was described as an aggressive, mesomorphic, 235-lb professional athlete. This individual scored 130 repetitions during the pre-study phase of the experiment. The order of testing for this participant was A, B, C, D, and he received stereotyped suggestion without hypnosis on the first experimental day (A). His performance matched the pre-study value of 130 repetitions on this trial. Stereotyped suggestion in deep trance was employed on the second day (B), and his performance increased to 180 repetitions when stopped by the investigator. This is an example of a case where true maximal performance was probably limited during the pre-study phase by inhibitory mechanisms, and it is possible that this inhibition or 'governor' played some type of protective role. The investigator's decision to stop the test would seem prudent, but there was no muscle injury or pain following this remarkable performance. The third experimental trial (C) involved post-hypnotic suggestion in deep trance, and the investigator elected to have Charles continue to self-imposed exhaustion. His performance increased even more to 230 repetitions, and on the fourth day (D) involving post-hypnotic suggestion in light trance, he increased to 333 repetitions. Charles was tested some weeks later following the experiment without hypnosis or suggestion, and he was again stopped by the investigator when he

reached 350 repetitions. Johnson and Kramer (1961) reported that in all five tests ‘... he had a crisis at about each 90 presses, but after a struggle and violent effort he would resume the cadence, sometimes after a burst of rapid presses’ (p. 526).

Examples of this nature are commonly regarded as ‘superhuman’ in the field of exercise and sport psychology, and they are sometimes referred to as ‘psychological breakthroughs’. Of course, it is only one’s vantage point that permits such a division of mind and body. It is difficult to imagine that ‘physiological’ change and mechanisms are not involved when such phenomenal physical efforts take place. There is an extensive body of literature in the field of exercise science dealing with fatigue and the factors limiting sustained effort. Accumulation of blood and muscle lactate along with other exercise metabolites eventually leads to fatigue and impairment. What is the limiting factor? How can superhuman feats be possible? Do changes occur in the central nervous system that result in efferent messages being sent to the working musculature? Or, do changes occur in the periphery with the result that afferent flow leads to modification of effort sense at a central level? We now know that hypnotic perturbation of effort sense not only results in cardiovascular changes, but brain activation takes place as well (Williamson *et al.*, 2001, 2002). Some might argue that we merely need to know whether or not hypnotic suggestion can influence physical performance, it is not necessary to know how this occurs. This is a mistake, however, since we need to know how and why effects take place in order to advance both our science and our practice.

During the 1960s when Johnson and his colleagues were conducting their pioneering research at the University of Maryland, it was not possible to employ magnetic resonance imaging (MRI), positron emission tomography (PET) or single photon emission computed tomography (SPECT) in studies of the type they were conducting. That is now possible, and we need multidisciplinary inquiry in order to understand better the nature of hypnosis, as well as the influence of hypnosis on human performance. Nevertheless, there are additional observations made by Johnson and Kramer (1961) that still possess currency today, and these instructive points are summarized next.

Since Johnson and Kramer (1961) employed post-hypnotic amnesia, Charles did not know his score after the second experimental trial. However, following the trance and testing, he reported that he knew ‘... he had been through something’ (p. 526). This can be explained in part by the investigators’ report that a pool of sweat had accumulated on the bench and under Charles’s head following this trial. After the third trial which involved post-hypnotic suggestion where he had conscious recall of the testing, Charles stated ‘... that repeatedly he was quite sure that he could do no more but to his surprise would see his arms rise with the weight’ (p. 527). Several months following the experiment, hypnotic age regression was employed, and Charles was regressed to the day when hypnosis was first employed in the test series. When asked to experience and verbalize the hypnosis session, ‘... he gave evidence of having taken the suggestions extremely literally and to have dealt with the situation on a life or death basis’ (p. 527). In order to get a better appreciation of the nature of this seemingly superhuman feat, Johnson and Kramer (1961) proceeded to test a 250-lb successful professional football player. This athlete was a champion in the field events as well, and he was a habitual weight lifter. He was tested without hypnosis or suggestion, and he was merely asked to perform the same supine press task and to do his best. He was tested on four separate days with scores of 90, 94, 92 and 92. This observation would seem to justify the view that Charles had experienced transcendence of normal capacity as first discussed by Hull (1933).

In concluding their discussion of the endurance test data, Johnson and Kramer (1961) note that Charles’s performance was ‘... too exceptional to be included in the statistical analysis’. And, they go on to say that data of this type require an additional explanation. In an effort to offer further insights regarding this case, they cite writing on the physiology of supraspinal mechanisms. In commenting on the increase in muscular strength associated with emotional excitement, Gellhorn has pointed out that such increases are associated not only with the influence of adrenomedullary secretions on muscle, but with intensification of discharges from the motor cortex. Such a cortical effect was thought at the time to be the result of impulses from the

hypothalamus, and more recent brain imaging reports by Williamson *et al.* (2001, 2002, 2005) support the contention that hypnotic suggestion can lead to changes in 'central command', which in turn results in cardiovascular effects, as well as changes in brain activation.

28.3.1.2. Example 2 (Mittleman *et al.*, 1992)

The influence of self-hypnosis on thermal responses during immersion in 25°C water was evaluated in this example. The efficacy of hypnosis in improving thermogenic responses during bicycle ergometer exercise performed while immersed in cold water was examined in 12 males. The independent variable in this study was change in body heat storage, and this was measured objectively with an on-line computerized system. The participants in this study were evaluated under a control condition and again within 24 h in the hypnosis condition. There were no group differences (nomothetic data) in the rate of heat production, heat loss, mean skin temperature or deep body temperature (rectal) in the control and hypnosis conditions. Furthermore, hypnotic susceptibility was not correlated with changes in thermal status. The exercise was performed at an oxygen uptake of about 1.5 l/min, and the ratings of perceived exertion did not differ in the two conditions. However, perceived sensation of cold was lower during the second rest period of the hypnotic immersion. It is possible that the lack of agreement between the objective thermal ratings and the perceived sensation of cold might have resulted from compliance arising from demand characteristics operating in the experimental milieu. Inspection of individual thermal responses (idiographic data) offers an alternative explanation.

Three of the participants in this experiment reported the use of images of warm environments during the hypnosis condition, and these individuals lost heat at a faster rate during hypnosis compared with the control condition. These results can be viewed as paradoxical in the sense that these individuals responded in a manner that was opposite to the hypothesis or expectation. In other words, while most ($n = 9$) of the participants in this study had no thermal effect with hypnosis, three of the 12 lost heat at a faster rate. The investigators indicate that these

three individuals reported the use of relaxation and mental imagery such as 'cycling on a warm day'. Shivering is a natural response in such an environment, and this activity has the protective advantage of producing heat. It is possible that relaxation resulted in the suppression of shivering with a resultant reduction in heat production. The investigators also speculated that '... image of a warm day may evoke vasodilation to enhance rate of heat loss' (p. 695).

The authors of this report conclude that use of a brief hypnotic training program did not improve thermogenic responses to cool water immersion. This conclusion seems to be appropriate on the basis of the nomothetic data analysis. Examination of the thermal responses in the three individuals who reported the use of relaxation and imagery leads to an important finding since the paradoxical effect (heat loss) was unexpected; this could lead to hypothermia with sustained exposure to cold. While hypnosis might be quite effective in improving the sensation of warmth when exposed to a cold environment, this could lead to suppression of the shivering response, vasodilation, heat loss and hypothermia. Indeed, the use of hypnosis in an effort to cope with exposure to cold might be more effective with the use of exercise imagery rather than relaxation. This report makes an important contribution to our understanding, but only when the nomothetic and idiographic data are both considered. The report also demonstrates the efficacy of multidisciplinary inquiry in efforts to understand hypnotic phenomena better. Use of hypnosis alone in such a setting, without physiological markers, might easily result in erroneous conclusions.

28.3.1.3. Example 3 (Morgan *et al.*, 1983)

The efficacy of a nonhypnotic cognitive strategy designed to enhance endurance performance was evaluated by Morgan *et al.* (1983) with 27 healthy males. The cognitive strategy was labeled as 'dissociation', and pilot research had revealed this procedure to be 19 percent superior to placebo and control treatments. Maximal aerobic power was first assessed in the 27 individuals on a treadmill, and they were randomly assigned to a control ($n = 13$) or dissociation ($n = 14$) group. On a separate day all of these volunteers were assessed on a treadmill walk to

exhaustion at 80 percent of their individual maximum, and this performance was regarded as the baseline measure of endurance. The two groups were found to have similar endurance times of 16.7 (dissociation) and 16.6 (control) min.

All participants were again evaluated on endurance time to exhaustion, and each individual had at least 48 h of rest between the baseline and experimental exercise bouts. The procedures employed in the second trial were identical, with the exception that those individuals in the dissociation group were given a set of stereotyped instructions published by Morgan *et al.* (1983). The dissociation narrative was crafted on the basis of (1) earlier interviews performed with marathon runners (Morgan and Pollock 1977); (2) a cognitive strategy reported to be employed by Tibetan monks (Mahetangs) trained in 'swiftness of foot' (Watson 1973); and (3) the relaxation response described by Benson *et al.* (1978). The approach described by Watson (1973) is a form of 'cultic' meditation, whereas the relaxation response of Benson *et al.* (1978) is conceptualized as 'noncultic' meditation. The approach taken in our experiment relied on repetition of the word 'down' in synchrony with leg movement rather than the word 'one' used by Benson *et al.* (1978) or a sacred/secret word or phrase used by the monks trained in the art of long-distance running. We did not define this procedure as a form of hypnosis, but rather we conceptualized the dissociative strategy as noncultic meditation. It has been suggested by some hypnosis researchers and clinicians that our use of eye fixation and repetition of a pseudo-mantra in synchrony with leg movement could represent a form of autohypnosis. While we cannot argue that our approach would not result in hypnotic-like experiences, we did not define or conceptualize the procedure as hypnosis when recruiting potential participants or providing informed consent.

The results of this experiment yielded a substantial increase in endurance performance for the dissociation group, whereas the control group was unchanged. There was a mean difference in performance amounting to 7 min in favor of the dissociation group, and the effect size for this difference was 1.6. However, the two groups did not differ on other variables of interest measured at the fifth or final minutes

of exercise. Heart rate, ventilation, oxygen uptake, carbon dioxide production, epinephrine, norepinephrine, lactate, state anxiety and perceived exertion did not differ in the two groups. It appears that dissociation enabled the individuals to tolerate the accumulation of blood lactate, epinephrine, norepinephrine and respiratory distress for a longer period of time.

Eleven of the 14 individuals in the experimental group experienced an increase in performance with the use of dissociation, and the results for one of these individuals were quite remarkable. The idiographic data for this outlier are sufficiently unusual to warrant further discussion. The principal reason for evaluating the maximal aerobic power and having all individuals tested at a fixed percentage of maximum in this study was to ensure that a relative demand was placed on all participants (e.g. 80 percent $\dot{V}O_{2max}$). By using a relative metabolic demand, the high fit individual is required to do more work (e.g. steeper grade) than those judged to possess lower levels of fitness. One individual in the dissociation group, hereafter referred to as 'Roger', had an endurance time of 45 min compared with the group's mean time of 21.5 min, and this value was approximately 2.5 standard deviations above that observed for the group. Roger also happened to have the highest $\dot{V}O_{2max}$ value (i.e. 70 ml/kg/min) of anyone in the study, and such a value is comparable with levels noted in elite distance runners (Morgan and Pollock 1977). It is even more remarkable that Roger was not an endurance athlete, nor was he engaged in aerobic training at the time of his involvement in the experiment. Roger was also unique in another regard. His blood lactate level was observed to be slightly above a resting value when he was exercising at 80 percent of $\dot{V}O_{2max}$. This observation, in concert with his high aerobic power, suggests that Roger had the potential to be a successful marathon runner. With this hypothesis in mind, he was evaluated in our laboratory several weeks after the completion of the experiment (Morgan *et al.* 1983).

Roger volunteered to take part in a simulated marathon carried out on a motor-driven treadmill, and the details of this simulation appear in Morgan (1981). It was estimated that he would be able to complete the marathon distance of 26 miles, 385 yards (42.2 km) while running at

a speed of 7.5 mph (12.1 km/h) on level grade. It was understood that he would be able to decrease the treadmill speed by giving a thumbs down signal, and he was able to run for 140 min at the prescribed speed, at which time he signaled a desire to have the speed decreased. The principal findings for this simulation are summarized in Figure 28.1. The speed was decreased to a walking pace, followed by complete rest, a return to running at 6 mph, increasing to 6.5 mph, and finally stopping altogether following 200 min of exertion which involved a distance of 23 completed miles of the simulated marathon. It was agreed *a priori* that the investigators would terminate the simulation if the individual's rectal temperature reached 40°C or if any electrocardiographic abnormalities were observed. There was a gradual increase in the individual's heart rate and rectal temperature during the first 2 h of the simulated marathon. His heart rate reached 160 beats per min (bpm)

and his rectal temperature was 38.9°C at the 15-mile point, and there was no reason to believe that he was approaching the 'wall' often described by marathon runners (Morgan and Pollock, 1977). While his heart rate was well below his maximal value of 195 bpm during most of the run, it will be noted that an increase from 160 to 180 bpm occurred as he reached the 23rd mile. His rectal temperature had been 38.9°C prior to the rest and walking phase, but it approached the 40°C threshold established for termination of the simulation. Ratings of perceived exertion according to Borg's category rating scale also revealed that he had reached his limit, and the simulation was terminated at this point.

This nonhypnotic example has been presented in order to illustrate several points. First, efforts to enhance maximal physical performance should be carried out within a multidisciplinary context in order to understand how

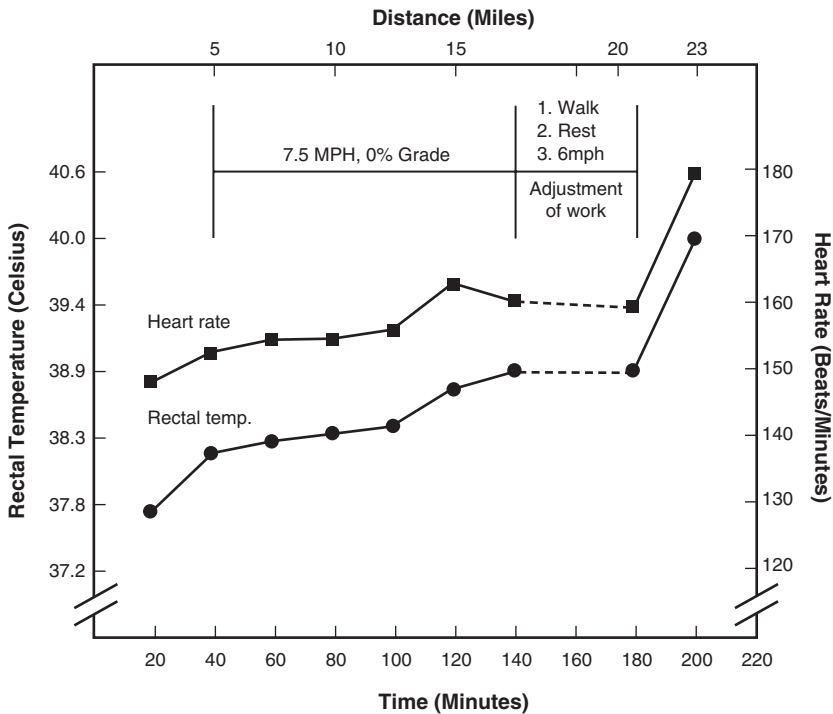


Fig. 28.1 Heart rate and rectal temperature during a simulated marathon performed on a motor-driven treadmill. This figure was adapted from a paper titled 'Psychophysiology of self-awareness during vigorous physical activity' by Morgan (1981), and it is reproduced with permission of the American Alliance for Health, Physical Education, Recreation and Dance.

performance enhancement occurs. Second, the use of an intervention model based on input from disciplinary expertise from fields such as psychology, physiology and medicine ensures the health and safety of clients, as well as participants in experiments. Third, this work illustrates that endurance performance can be significantly enhanced above customary baseline levels in most individuals with selected psychological procedures of the type employed in this research. Fourth, it is sometimes possible in the case of some individuals not only to transcend normal physical capacity, but to evoke superhuman feats in such individuals. It is not possible, however, to understand such phenomena using disciplinary models of a unitary nature. Our discussion will now proceed to the use of hypnosis in efforts to understand and enhance physical performance in selected cases.

28.3.2. Remarkable case-based material collected in the context of an *n* of 1 study

What follows is a collection of case studies that might be included in a discussion of hypnosis and physical performance, and while our selection of case material may be regarded as arbitrary, we have made these selections in order to illustrate specific techniques and issues regarded as relevant in professional consultation. The first case was described by Eysenck (1941) in a classic paper involving the experimental study of the improvement of mental and physical functions with hypnosis. Two additional cases described by Morgan (1993, 2002) follow in order to emphasize the importance of multidisciplinary inquiry in such consultation efforts.

28.3.2.1. Example 1 (Eysenck, 1941)

One of the first and most compelling examples involving the influence of hypnosis on the transcendence of normal physical performance was a case study published by Eysenck (1941). The subject, Mr R., was a former schoolmaster, about 50 years of age. Eysenck reports that he was chosen for study because of his ability to enter deep hypnosis easily, and his depth of hypnosis varied little across experimental trials. The hypnotic induction was based upon the method of eye fixation along with suggestions based on

those described earlier by Young (1925). Mr R. was not only able to enter deep hypnosis, but he experienced complete post-hypnotic amnesia. A total of 30 physical and mental tests were administered, and approximately 60 h of testing across days was completed. Mr R.'s performance averaged 33 percent higher in the hypnotic compared with the control condition for the 30 tests. One of the tests involved muscular endurance, and the results will be summarized next given the chapter's focus. It should be emphasized that Eysenck (1941) did not employ suggestions designed to enhance performance. Therefore, the gains noted for the hypnosis condition were not due to the confounding of hypnosis and suggestion which has plagued much of the related research in this area.

Mr R. was asked to squeeze a dynamometer 24 times as hard as possible with rest pauses of 10 s between each contraction. Testing was performed on 10 separate occasions, and the trials were alternated in the control (C) and hypnosis (H) order. The order was C–H–H–C half of the time and H–C–C–H the other half of the time. The average responses for the two conditions are summarized in Figure 28.2 where the responses for the first and second, third and fourth, and so on through contractions 23 and 24 are averaged. Twelve data points appear for the two conditions, and each point represents the average of 10 contractions performed by Mr R.

A typical fatigue curve was observed for the control condition with a gradual reduction from about 1,750 g at the outset to about 1,200 g of force at the conclusion. This pattern was not observed for the hypnosis condition where the initial contraction averaged about 1,825 g, decreased to about 1,500 g at the tenth trial, and was sustained at this level throughout the remainder of the trials. This remarkable gain in performance was presumably due to hypnosis *per se* since no suggestion was employed in either condition. Inspection of Figure 28.2 reveals that force of contraction did not fall after the tenth contraction under hypnosis, but a steep decline took place from this point onward for the control condition. At the completion of both conditions, Mr R. was asked on one or two occasions to continue squeezing the dynamometer following completion of the trial, and the data for these epochs are illustrated by the dotted lines in the figure.

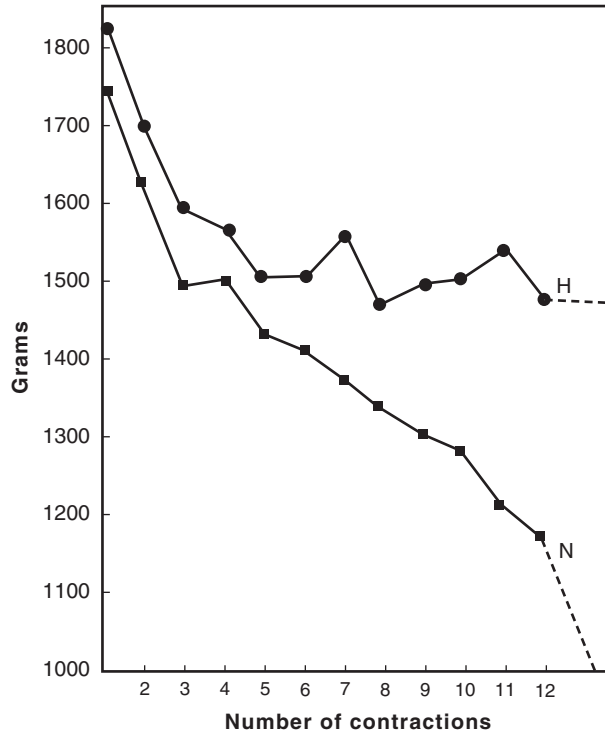


Fig. 28.2 Curves showing development of muscular fatigue in normal (N) and hypnotized (H) states. This figure was reproduced from a paper titled 'An experimental study of the improvement of mental and physical functions in the hypnotic state' by Eysenck (1941), and it is reproduced here with permission of the British Journal of Medical Psychology © The British Psychological Society.

It will be noted that performance declined dramatically at this point in the control condition, but force production was maintained with hypnosis. In his discussion of this phenomenal performance Eysenck (1941) reported that Mr R. '... goes on, machine-like, without tiring' (p. 312) and '... fatigue is inhibited under hypnosis' (p. 315).

These results are truly remarkable, and they serve to support the hypothesis that hypnosis can result in the transcendence of normal capacity. But, how does hypnosis bring about such an effect? A dynamometer test of the type described by Eysenck (1941) would certainly result in a number of biochemical and cardiovascular effects. It would be expected, for example, that a significant accumulation of muscle and blood lactate would occur along with elevations in

plasma levels of epinephrine and norepinephrine, and it would be predicted that a fatigue curve of the type illustrated for the control condition would result. It would also be anticipated that perceived exertion would increase with the onset of fatigue in the control condition, and therefore, it would be interesting to know what happens to effort sense under hypnosis. It is known that hypnotic perturbation of effort sense can be increased and decreased in a systematic manner during cycle ergometry maintained at a constant power output of 100 W (Morgan *et al.*, 1973, 1976; Williamson *et al.*, 2001). Regional cerebral blood flow (rCBF) and cardiovascular changes have also been shown to change with the perturbation of effort sense during constant load exercise

(Williamson *et al.*, 2001), as well as during the imagery of exercise at rest (Williamson *et al.*, 2002). The type of imagery was patterned after that described by Wang and Morgan (1992), and it consisted of 'internal' as opposed to 'external' imagery. Furthermore, the imagery of exercise was associated with changes in perception of effort, rCBF and cardiovascular responses identical with those noted for actual exercise.

With the advent of brain imaging technology, it has been possible to demonstrate that hypnosis not only alters cardiovascular responses, but brain activation is influenced as well during handgrip exercise (Williamson *et al.*, 2001). Hence, it is likely that a number of biochemical, cardiovascular and neurophysiological changes took place during the experiment described much earlier by Eysenck (1941). Appropriate physiological measures should be employed in future research and clinical applications designed to enhance physical performance with hypnosis. This recommendation calls for the use of multidisciplinary models in order to understand better the nature of performance enhancement.

28.3.2.2. Example 2 (Morgan, 1993)

The case report described in the following example was published earlier in a chapter titled 'Hypnosis and sport psychology' (Morgan, 1993), and it is reproduced in the present work with permission of the American Psychological Association. This case describes a common problem in which an athlete is no longer able to perform at his or her customary level.

The case involved a 21-year-old distance runner, hereafter referred to as 'Steve', who had previously established a school and conference record but was unable to replicate the performance. Indeed, Steve was not able even to complete many of his races, much less dominate a given competition. Problems of this nature are usually diagnosed as 'staleness' in the field of sports medicine, and the only effective treatment appears to be rest (Morgan *et al.*, 1987a). However, this was not the problem in the present case. Steve's ability to perform at his previous level was judged by the coach simply to reflect inadequate motivation and unwillingness to tolerate the distress and discomfort associated with high-level performance. On the other

hand, Steve reported that he was willing to do anything to perform at his previous level, and he felt that his principal problem stemmed from inadequate coaching. Although Steve and the coach were both interested in the restoration of the runner's previous performance ability, they were clearly at odds with one another. Indeed, the conflict had reached the point where the two were unable to discuss the matter, and Steve had turned to his team physician for support. However, a thorough physical examination, including blood and urine chemistries routinely used in sports medicine, failed to reveal any medical problems.

The physician proposed that hypnosis be used in an effort to resolve this problem, and the athlete was eager to try such an approach. However, it seemed appropriate first to evaluate Steve's physical capacity in order to ensure that he was actually capable of performing at the desired level. It is well documented that aerobic power is an important factor in successful distance running. Therefore, Steve was administered a test of maximal aerobic power on a treadmill. This required that he run at a pace of 19.3 km/h on the treadmill, and the grade was increased by 2 percent every minute until he could no longer continue. The results of this treadmill test are summarized in Figure 28.3. Steve achieved a peak or maximal $\dot{V}O_2$ of 70 ml/kg/min by the fifth minute of exercise, and his ability to uptake oxygen fell during the sixth minute. In other words, a true physiological maximum, as opposed to a volitional or symptomatic maximum, was achieved. The recorded value of 70 ml/kg/min represents the average reported for elite distance runners (Morgan and Pollock, 1977), and Steve was therefore physiologically capable of achieving the desired performance level. However, our calculations revealed that it would be necessary for him to average 96 percent of his maximum throughout the event to replicate his record performance. This could potentially be problematic because exercise metabolites such as lactic acid begin to accumulate and to limit performance during prolonged exercise at 60–80 percent of maximum in most trained individuals. In other words, it would have been possible for Steve to perform at the desired level, but such an effort would be associated with considerable discomfort (pain).

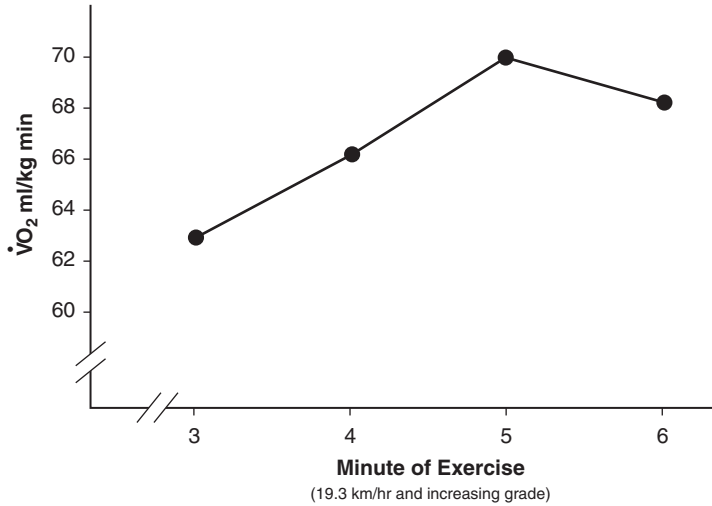


Fig. 28.3 Graph depicting the calculation of maximal oxygen uptake measured during a treadmill test performed at a speed of 19.3 km/h and increasing grade during each minute of exercise.

Steve was observed to score within the normal range on anxiety, depression and neuroticism as measured by the State-Trait Anxiety Inventory (STAI), Depression Adjective Check List (DACL) and Eysenck Personality Inventory (EPI), respectively. He scored significantly higher than the population norms on extroversion (EPI), but this has been a common finding for many athletes (Morgan, 1980*b*). He was found to be hypnotizable following preliminary induction and deepening sessions, and he was eager to pursue ‘insight training’ through hypnosis and deep relaxation. Steve was viewed as a good candidate for hypnosis for the following reasons: (1) there were no medical contraindications detected; (2) he possessed the necessary physiological capacity to achieve the desired goal; (3) there were no apparent psychological contraindications; and (4) he was able to enter into a deep trance.

Steve was next age-regressed to the day of his championship performance, and he was instructed to describe the competition as well as any related events that he judged to be relevant. However, rather than telling him that ‘the race was about to begin’ or instructing him in the customary ‘on your marks’ command, he was asked to recall all events leading up to the race on that day. He was instructed,

For example, try to remember how you felt when you awakened that morning; your breakfast or any

foods or liquids you consumed; the temperature before and during the race; the nature and condition of the course; interactions with your coach, team-mates and opponents; your general frame of mind; and then proceed to the starting line when you are ready.

Steve’s team physician and the first author had previously asked him if it would be acceptable for either or both of them to ask questions during the session, and Steve had no objections. Steve had a somewhat serious or pensive look, but within a few minutes he began to smile and chuckle, saying that he had false-started. When asked why this was so amusing, he replied that it was ‘ridiculous since there is no advantage to a fast start in a distance race’. This event can be viewed as a critical incident because runners and swimmers will intentionally false-start at times in an effort to reduce tension. Others will do this in an effort to upset or ‘unnerve’ their opponents. At any rate, his facial expression became serious once again, and his motor behavior (e.g. grimacing and limb movements) suggested the race had begun. The verbatim narrative follows:

The pace is really fast. I’m at the front of the pack. I don’t think I can hold this pace much longer, but I feel pretty good. The pace is picking up ... I don’t think I can hold it ... my side is beginning to ache ... I have had a pain in the side many times. It will

go away if I continue to press. There ... it feels good now. The pain is gone, but I'm having trouble breathing. I'm beginning to suck air ... the pain is unbearable ... I'm going to drop out of the race as soon as I find a soft spot. There's a soft, grassy spot up ahead ... I'm going to stop and lay in the soft grassy spot ... wait, I can't, three of my teammates are up on top of the next grade ... they are yelling at me to kick ... I can't let them down. I will keep going. I'm over the hill now ... on level grade ... it feels ok ... I'm alright. There's another hill up ahead. I don't like hills ... It is starting to hurt again ... can't keep this up ... I'm going to find a soft spot again and stop. There's a spot ahead ... I'm going to quit ... I'm slowing down ... this is it. Wait, there ... I see a television set about ten feet off the ground at the top of the hill ... hey, I'm on the TV, but this race isn't televised ... but I can see myself clearly on the TV ... I'm not here anymore ... I'm on the TV. Now there's another TV, but to the right of the first one. My parents are on that TV, and they are watching me run this race on the other TV. I can't stop now. I can't let them down. Got to keep going. I'm not here ... I'm on TV. It's starting to feel better. I feel like I'm in a vacuum now. I can't feel anything. My feet aren't hitting the ground anymore ... I can't feel the wind hitting me. Hey, I'm a Yankee Clipper ... I'm on the high seas ... I'm flying ... the sails are full ... the wind is pushing me ... I'm going to blow out ... I'm going to kick ... I don't feel pain anymore ... This is going to be a PB, maybe a record, I'm flying now, there is no one in sight, this is my race, there's the tape, I'm almost there, the tape hit my chest, it feels weird ... weird ... weird ... the tape feels weird ... that's the end ... the end ... the end ... the end.

Steve appeared to be deeply relaxed at this point, and he had previously agreed to answer any questions we might have following his recall of the race. He was asked, 'You almost dropped out of the race twice. Why didn't you simply slow your pace? Would that not have been better than quitting?' Steve replied without any hesitation that 'Oh, no, you really have to take pride in yourself to quit. You have to be a real man ... it takes guts to quit. Anybody can continue and turn in a lousy performance. I have too much pride to do that. I would rather quit'. Although this view can be judged as somewhat unusual, it is noteworthy that Steve had dropped out of more races than he had completed during the present season.

Steve was asked to clarify the meaning of selected terms or phrases he had used, and then he was asked the following question: 'Would you like to have complete recall for all of this information, or would you prefer to forget about it, or perhaps, have it come back to you gradually?' The decision to ask this question was based on the earlier demonstration by Johnson (1961a) that athletes sometimes do not wish to become aware of repressed material in the post-hypnotic state. The decision to ask whether he would prefer that this information gradually return was also based on Johnson's case study, and it was intended to prevent Steve from becoming overwhelmed or further confused as a result of this previously repressed material. At any rate, Steve responded that he would like to have complete recall following the session. Hence, no effort was made to produce post-hypnotic amnesia.

Steve was also asked in the hypnotic state whether he wished to continue with this program of insight training, and he replied that he would like to give this some thought. For this reason, post-hypnotic suggestions designed to ensure adherence to future hypnotic sessions were not administered. In other words, post-hypnotic suggestions designed to produce amnesia regarding the previously repressed material, as well as motivating instructions designed to ensure continuation, could have, but were not, administered to Steve. This decision was based on our belief in the efficacy of nondirected approaches in such cases, as well as *a priori* contingency agreements with Steve. These agreements were of a generic nature, and they were decided on prior to intervention with hypnosis.

This case serves to illustrate several points that practitioners in sport psychology or sports medicine might wish to consider prior to using hypnosis with an athlete. First, efforts designed to enhance physical performance with hypnosis should not be carried out within a unidimensional context. It is important first to obtain relevant information concerning the athlete's physiological, psychological and medical state. Second, the decision to proceed with hypnosis should be made after obvious contraindications (i.e. pathophysiology and psychopathology) have been ruled out. Third, peak performance involving the transcendence of usual or customary levels can be associated with cognitive-perceptual

processes of a remarkable nature. The record-setting performance was found to be associated with considerable pain, but the sensation of pain had been repressed, i.e. Steve was unaware of this pain experience in the nonhypnotic state. However, the cognitive-perceptual experience was 'replayed' during hypnotic age regression, and Steve elected to have awareness of this experience in the post-hypnotic state. It is possible that conscious awareness of this previously repressed material may have provided Steve with insights he previously lacked.

Steve subsequently elected to terminate insight training, and this decision was not congruent with his initial statement that he would do anything to return to his previous level of performance. It should be kept in mind that although he did possess the physiological capacity necessary to perform at a high level, to do so would have been associated with considerable pain. Also, despite the fact that his subsequent performance did not improve, our subjective impression was that he had 'come to terms' with the situation. In a sense, then, he did not terminate the insight training we were providing, but rather, the insight he gained resolved the problem—at least from his perspective.

Fourth, it is noteworthy that Steve's record performance was characterized by the cognitive strategy known as dissociation (Morgan *et al.*, 1983; Morgan, 1984, 1997, 2001). Runners who use this strategy attempt to ignore sensory input (e.g. muscle pain and breathing distress) by thinking about other activities (i.e. distraction). Other runners have reported that they initiate 'out-of-body' experiences by entering the body's shadow cast on the ground in front of them. These cognitive strategies have been labeled as dissociation. Although this strategy can clearly facilitate endurance performance (Morgan *et al.*, 1983), it is not the preferred strategy of elite distance runners (Morgan and Pollock, 1977). Indeed, elite runners have been found to use a cognitive strategy known as association, which is based on systematic monitoring of physical sensations, rather than ignoring such input (Morgan and Pollock, 1977; Morgan *et al.*, 1987b, 1988).

There is a possibility that Steve could have been taught to use dissociation (1984), in either the hypnotic or the nonhypnotic state, in an effort to help him cope with the perception of

pain during competition. It is also possible that such an approach would have led to enhanced performance, because (1) laboratory research has shown that such an approach is ergogenic (Morgan *et al.*, 1983); and (2) Steve had actually experienced a form of dissociation during his record-setting performance. However, ignoring sensory input while performing at a high metabolic level in a sport contest is not without risk, and such an approach can lead to heatstroke, muscle sprains or strains, and stress fractures (Morgan, 1984). Cognitive strategies designed to minimize or eliminate the sensation of pain and discomfort during athletic competition and training should be used judiciously and with caution.

28.3.2.3. Example 3 (Morgan, 2002)

The case report described in the following example was published earlier in a chapter titled 'Hypnosis in sport and exercise psychology' (Morgan, 2002), and it is reproduced here with permission of the American Psychological Association. A 27-year-old competitive cyclist, hereafter referred to as 'Max', approached us with the request that hypnosis be used to resolve a problem he was experiencing with his training. Max was unable to complete routine training rides of 50–75 km, and he was concerned that he would not be able to compete effectively in a forthcoming national race. Max completed a standard battery of psychological questionnaires, and the results were remarkable in that he was found to be depressed and anxious. Because of the elevated scores on these measures, it was felt that his performance problem should not be addressed with hypnoanalysis. Max was referred to a clinical psychologist for evaluation and possible treatment. Not only did this assessment reveal that he was clinically depressed, but it also showed that crisis intervention was warranted. Therefore, Max was referred to an outpatient psychiatry clinic where he was treated for several months. Treatment consisted of time-limited psychotherapy in concert with antidepressant drug therapy.

During the course of his psychotherapy, Max continued to visit our physiology of exercise laboratory, where he had previously completed a test of maximal aerobic power on the bicycle ergometer. This test revealed that

he had a peak $\dot{V}O_2$ of 66 ml/kg/min, i.e. maximal capacity was defined in terms of physiological capacity rather than a symptom-limited, or subjective, maximum. He was retested using the same protocol, and the test was performed by the same laboratory technician who performed the earlier assessment. Max's maximal capacity had fallen to 53 ml/kg/min. Because a reduction of 20 percent in actual physiological capacity is both atypical and remarkable, Max was retested a week later to confirm these results. The second test yielded identical results, and these data served to confirm that the decision to use hypnosis in such a case was contraindicated, i.e. Max could no longer perform at his customary level, because he no longer had the physiological capacity to do so. The unexplained reduction in $\dot{V}O_{2max}$ warranted further assessment, and he was referred for a complete physical examination, including routine blood and urine chemistries. All results were negative, with the exception that he seemed to have some suspicious chest sounds. For this reason, Max was referred to a pulmonary function laboratory, where all test results were found to be negative.

The psychotherapy and drug therapy led to a reduction in Max's anxiety and depression, and he was eventually able to resume customary levels of training. However, the 20 percent decrement in physical capacity was not restored, nor was he able to return to competitive cycling at the national level. The purpose of elaborating on this case study is 3-fold. First, the 'motivational' problem was based on a profound and difficult to explain reduction in Max's physiological capacity. Second, the use of hypnosis to treat this problem was contraindicated owing to the demonstration of both psychopathology (anxiety and depression) and pathophysiology (reduced $\dot{V}O_{2max}$). Third, it is apparent in retrospect, and on theoretical grounds, that a multidisciplinary approach to problems was, and is, the only defensible course of action.

28.4. Summary

Research studies involving the influence of hypnosis on physical performance in exercise and sport settings has relied almost entirely on quasi-experimental as opposed to true experimental designs. Too often designs confound treatment

condition (e.g. hypnosis versus control) with motivation (low motivation versus high motivation). The confounding of hypnosis with other factors influencing performance (e.g. rapport, suggestion, demand characteristics) has been a serious methodological problem in this literature. However, a careful review of the research literature indicates that hypnotic suggestion is superior to suggestion administered under non-hypnotic control conditions for selected physical tasks in highly hypnotizable individuals. Tasks involving prolonged efforts (i.e. endurance) are particularly responsive to hypnotic suggestion (Eysenck, 1941), whereas single, all-out efforts (i.e. strength, power) are not (Johnson, 1961*b*). The field has neglected reports of remarkable and compelling shifts in performance from both the group- and case-based literatures (Eysenck, 1941; Ikai and Steinhaus, 1961; Johnson, 1961*b*). Dismissing these ideographic data diminishes the discipline.

The conclusions reached in this summary are largely similar to those advanced in earlier reviews dealing with the influence of hypnosis on human physical performance (Hull, 1933; Gorton, 1959; Johnson, 1961*b*; Morgan, 1972, 1985, 1993, 1996; Morgan and Brown, 1983). One exception to this generalization is the report by Ryde (1964) who described the successful use of hypnosis in the treatment of 35 individuals with various ailments commonly treated by sports medicine practitioners. These problems consisted of Achilles' tendon sprains, arch sprains, bruised heels, shin splints, tennis elbow and other common ailments involving minor trauma often treated in the sports medicine clinic. The use of hypnosis in such cases to manage pain offers indirect evidence of its efficacy since the individuals described in Ryde's report returned to regular physical activity earlier than otherwise would have been possible (Ryde, 1964). This report should be of interest to physicians, physical therapists, psychologists and athletic trainers involved in the treatment of sports injuries.

This chapter differs from others published heretofore in that a case is made for the use of multidisciplinary approaches when applying hypnosis in efforts to enhance physical performance above baseline levels, as well as the restoration of previous performance levels that no

longer appear to be possible. The case we make may seem daunting to the practitioner considering the application of hypnosis in exercise and sport settings, but we believe that such an approach is defensible from an ethical, moral, legal and scientific standpoint. It is our view that efforts to enhance performance to a level that exceeds an individual's capacity can be problematic. The challenge, of course, is first to quantify the individual's capacity in order to ascertain whether or not the performance goal is realistic.

Advances in our understanding of hypnosis will be enhanced with the adoption of multidisciplinary models. This can be supported in exercise and sport settings on philosophical grounds alone, and there is compelling statistical theory and empirical evidence arguing against the use of unitary, narrow, disciplinary approaches. It is not sufficient to know whether or not hypnosis is effective in the enhancement of human physical performance, but it is also important to know how and why this intervention works.

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CHAPTER 29

Clinical hypnosis: the empirical evidence

Mark Moore and Anthony F. Tasso

29.1. Introduction

At present, clinical research has little or no influence on clinical practice. This state of affairs should be particularly distressing to a discipline whose goal over the past 30 years has been to produce professionals who would integrate the methods of science with clinical practice to produce new knowledge (Barlow, 1981, p. 147). The 30 years to which Barlow refers mark their beginning with the Boulder conference held in 1949, a conference which was the culmination of growing concern for the standards of clinical training in a time of increasing need for professional psychologists in the public sector. From the beginning, however, there were concerns as to how research and practice were to be brought together in a fruitful alliance. Yet seemingly by the end of the conference ‘the original chasm had disappeared’ (Raimy, 1950, p. 23) and the majority of attendees accepted the importance of including research training in clinical programs.

What, you may wonder, has this to do with the chapter at hand, and hypnosis in particular? Over 220 years ago, had Mesmer and his colleagues considered the relevance of Enlightenment thinking and the development of scientific inquiry to their practice of hypnosis, the history of our field might look quite different. Instead of engaging the members of the Royal Commission, who were to investigate the merits of mesmerism, in a consideration of the clinical importance of

distinguishing efficacy from effectiveness, the Commission were left to focus their evaluation of Mesmer’s treatment on mechanism only. The final report (Franklin *et al.*, 1785) dismissed the effects of mesmerism as due only to the effects of the imagination.

Yet what an effect! Clinical hypnosis, as both art and science, was the tragic victim of the willful blindness of the mesmerists and the myopic vision of the Royal Commission for over 150 years, as hypnosis was summarily dismissed from the realm of worthy scientific investigation. One wonders what would have happened if those practicing mesmerism had had sufficient insight into the scientific method utilized by the Commission. Perhaps in addition to accepting the conclusiveness of the Commission’s findings that treatment effects had nothing to do with animal magnetism, they could have persuasively argued that a study of mechanism is quite different from a study of effect, thus preventing the throwing out of the infant child that was hypnosis with the sullied waters of animal magnetism. It can be argued that it is of mutual benefit for both the fields of clinical hypnosis and psychotherapy in general that we (as clinicians who use hypnosis) both understand and appreciate the value of outcome research in evaluating and improving our work.

However, in drawing an analogy to the elegant work of the Royal Commission (Franklin *et al.*, 1785) on mesmerism, it would be remiss of me

not to acknowledge the continuing controversies that rack the field of outcome research in psychology. Fifty-three years on from the Boulder conference, it might appear that few, if any, of the bridges of understanding originally thrown across that 'chasm' remain. Even modern, more carefully engineered edifices (thrown from either side of the chasm) have apparently failed to connect both sides securely. The literature is rife with debate on the scientist–practitioner divide, and the sense of division is evident in the titles given to articles in the area such as 'Psychotherapy: Can the practitioner learn from the researcher?' (Strupp, 1989); 'Are the results of randomized controlled trials useful to psychotherapists?' (Persons and Silberschatz, 1998); and 'Psychotherapy practice and research: Repairing a strained alliance' (Goldfried and Wolfe, 1996).

The same question may be asked of the utility of clinical research for hypnosis. Why should the field of hypnosis place an emphasis on research? Looking again to the broader field of psychotherapy research, one answer may be found in Larry Beutler's (1998) argument that clinical research is a necessary response to recent legal and economical factors. From the late 1970s on, the law courts used two standards for determining psychotherapeutic effectiveness: the principle of the community standard and the doctrine of the respectable minority. The principle of the community standard reduces effectiveness to the popularity and common usage of a given treatment among professionals within a given region. Obvious problems occur with such a standard: one only has to reflect on how an unchallenged standard of popular belief would still have us believing the earth to be flat.

To make matters worse, the doctrine of the respectable minority, put forward to counter difficulties associated with the development of a clear community standard, holds that a clinician may also be judged according to the principles of the school he claims to adhere to. A school must be 'the line of thought of a respectable minority of professionals' (Beutler, 1998, p. 115), but case law has established that this minority could be composed of as few as six individuals! A lack of empirical, research-based standards of effectiveness would clearly leave the profession in a precarious position whereby legal experts rather than psychologists would define the types of therapy that could be practiced and reimbursed.

Beutler (1998) also noted how the Task Force on Promotion and Dissemination of Psychological Procedures was developed in 1992 in response to the Managed Health Care (MHC) system's view of psychotherapy as a homogeneous treatment and practitioners as interchangeable. The MHC system emphasized effectiveness based on cost and access rather than actual clinical benefit. However, MHC programs are beginning to shift their focus from cost onto empirical proof (Aaron, 1996), thus furthering the need for empirical standards within the field.

One source for empirical standards for treatment comes from the results of well designed randomized controlled trials (RCTs). Their use by the APA Division 12 Task Force in deciding what therapies can be categorized as empirically supported therapies has been described by Chambless and Hollon (1998). Chambless and Hollon (1998) propose that treatment efficacy is best demonstrated by controlled research (as exemplified by RCTs) that allows one to conclude that outcome gains are due to treatment effects rather than chance events such as patient differences, the passage of time or initial problem severity. A list of the criteria developed by Chambless *et al.* (1998) to evaluate the level of empirical support for a treatment is given in Table 29.1.

RCTs compare experimental psychotherapy treatments with control or comparison treatments, and factors that may obscure treatment effects are reduced or eliminated. As such, they are: (1) 'often single-blinded' so that participants are unaware of which treatment condition they are in; (2) 'use restrictive inclusion and exclusion criteria' so that participants are accurately categorized thus allowing a link between treatment and specific diagnosis to be made; (3) participants 'are commonly randomly assigned to experimental and control or comparison conditions' so that differences between groups can be more confidently attributed to treatment differences rather than initial group differences; and (4) 'typically use clinicians who are rigorously trained in the treatment they are to provide' so that the treatment is actually given in the form intended (Nathan *et al.*, 2000, pp. 964–965). The advantage of applying such a design to the study of psychotherapy is that it allows for greater internal validity than do poorly controlled studies.

Ironically, the central problem for many practitioners is that the bulk of such psychotherapy

Table 29.1 Criteria for empirically supported treatments (from Chambless *et al.*, 1998)

| Well-established treatments | |
|--|--|
| I. At least two good between-group design experiments must demonstrate efficacy in one or more of the following ways: A. Superiority to pill or psychotherapy placebo, or to another treatment B. Equivalence to already established treatment with adequate sample sizes. | II. A large series of single case design experiments demonstrating efficacy with: A. Use of good experimental design and B. Comparison of intervention with another treatment |
| Further criteria for well-established treatments | |
| III. Experiments must be conducted with treatment manuals or equivalent clear description of treatment IV. Characteristics of samples must be specified. V. Effects must be demonstrated by at least two different investigators or teams. | |
| Probably efficacious treatments | |
| I. Two experiments must show that the treatment is superior to waiting-list control group. or II. One or more experiments meeting the well-established treatment criteria IA or IB, III and IV above but V is not met. or III. A small series of single case design experiments must meet well-established treatment criteria. | |
| Experimental treatments | |
| Treatment not yet tested in trials meeting task force criteria for methodology. | |

research, which utilizes RCT's as the *sine qua non* of empirical design, appears to consist of 'impeccable studies of nothing very much' (Spence, 1994). In other words, the cost of such high internal validity is lowered external validity or generalizability: RCTs address questions of efficacy over effectiveness (Seligman, 1995). For example, statistically significant outcome differences in RCTs are often not equivalent to clinically meaningful change in symptomatology or quality of life for participants (Jacobson and Truax, 1991). Also, RCTs typically focus on uncomplicated diagnostic groups that are not representative of the complex, typically co-morbid patient groups seen in actual practice (Silverman, 1996); and the use of treatment manuals do not adequately capture psychotherapy as it is practiced (Smith, 1995).

Psychotherapy research, of course, is not limited to RCTs, and several authors (e.g. Howard *et al.*, 1996; Seligman, 1996) have argued that effectiveness studies, which aim to 'determine whether treatments are feasible and have measurable beneficial effects across broad popula-

tions and in real-world settings' (Nathan *et al.*, 2000, p. 965), have an important role to play in the empirical study of psychotherapy. Substantial numbers of effectiveness studies have yet to emerge, however; and, in the meantime, practitioners have taken umbrage with what is considered to be the premature creation of a list of empirically validated therapies that rests predominantly on the results of RCTs (Task Force on Promotion and Dissemination of Psychological Procedures, 1995; Chambless *et al.*, 1996; Beutler, 1998; Chambless and Hollon, 1998; Henry, 1998). Fears that such a list will be used by HMOs to justify the type and duration of treatment offered to clients are warranted (Steenbarger *et al.*, 1996) and the list will also have important implications for the training of future clinical psychologists (Calhoun *et al.*, 1998).

Yet what is the alternative? Few would disagree that clinical psychology, as both art and science, has at its heart a desire for greater understanding of psychopathology, assessment and treatment; an understanding hopefully

unencumbered by personal interest, bias or the mistaken perception of order amidst random chaos. The greatest hope for such an understanding is through empirical study. This chapter will thus begin with a consideration of what constitutes the current empirical approach to evaluating psychotherapy, and then consider examples of how this approach has been applied to clinical hypnosis.

29.2. Empirical approaches to outcome research

Efficacy is the key focus of RCTs, with their emphasis on determining if observed benefits are due to the effects of a treatments, or to confounding factors such as the type of patients assigned to the treatment or control conditions, biases or error in the outcome measures, and the impact of maturation and historical events. RCTs overcome such confounding factors through the random assignment of patients to the treatment condition and the control conditions.

All things being equal, randomization ensures that each group of patients assigned to a particular condition is on an equal footing on average with all other groups, both before treatment and over the course of time, with the only difference being the particular treatment applied to that group. In addition to the need for random assignment as an element of research designed to evaluate a treatment's efficacy, Chambless and Hollon (1998) also stress the need for replication of studies, particularly by independent research teams, if incorrect conclusions on the basis of single aberrant results are to be avoided.

Chambless and Hollon (1998) emphasize the need for sound methodology as a feature of efficacy research. While there is much debate as to what constitutes sound methodology, the minimal threshold of 'soundness' put forward by Chambless and Hollon is a design that compares a treatment with some form of 'minimal or no-treatment condition' (e.g. wait-list or assessment-only control). They consider a treatment to be *efficacious* if it is found by at least two teams of researchers to be of greater benefit than no treatment. In essence, while we may not know why it is that such a treatment works, we can easily see that it has some clinical utility and

that it is worth using. A more sound design is one in which a treatment is compared with a placebo or other treatment. If the effect of a treatment is found to be superior to alternative treatments or to conditions that control for placebo effects, i.e. the effects are due to more than simply positive expectations or receiving attention, then a treatment can be said to be *efficacious and specific*.

A comparison with an alternative established treatment is often the most conclusive design, if *equivalence* can be sufficiently demonstrated. Thus, Chambless and Hollon (1998) note that it is often tempting for researchers simply to compare a new treatment with an established treatment and to omit a control condition, as it is less time-consuming and seemingly easier to obtain an adequate sample size. However, such a design requires that the well-established treatment is implemented correctly and that there is also adequate statistical power, as approximately 50 patients are required for a significance test of a medium difference between two conditions if a conventional power level of 80 percent is to be achieved (Cohen, 1988, cited by Chambless and Hollon, 1998, p. 8).

Therefore, the authors suggest that 'equivalence is always easier to interpret if it occurs in the context of a design that compares the established efficacious treatment with the kinds of control conditions against which it was initially established' (pp. 8–9). In considering the issue of equivalence and how to interpret efficacy on the basis of null results, Chambless and Hollon suggest that treatments may be considered equivalent when '(a) investigators have a sample size of 25–30 per condition, (b) the unproven treatment is not significantly inferior to the established efficacious treatment on tests of significance, and (c) the pattern of the data indicates no trends of the established efficacious treatment to be superior' (p. 9).

RCTs also typically have the advantage of clearly defining the population for which a treatment is designed. The majority of recent research has relied on nomenclature provided by the *Diagnostic and Statistical Manual of Mental Disorders* (American Psychiatric Association, 1994). Chambless and Hollon argue that this is advantageous because it 'ties treatment research to a large body of descriptive psychopathology literature based on the same definitions, and

there are standardized diagnostic interviews that allow reliable diagnoses to be made' (1998, p. 10). The authors also point out that many clinicians are familiar with this diagnostic system because of its use by third-party payers. Alternative means are available to identify a population for which treatment is intended—examples include use of cut-off scores on questionnaires or interviews, but the important point is that the method used to do so is reliable and valid. Chambless and Hollon also advise that researchers describe other relevant sample characteristics, such as age range, socio-economic status, ethnicity and co-morbid conditions.

Of course, in order to determine that a given treatment produces an effect, it is necessary to assess the impact of that treatment on a particular problem. Thus the need for valid and reliable outcome assessment tools in RCTs and, if interviews are used, the demonstration of reliability for the interview-based measures. Measures should be selected that are not only pertinent to the problem being treated, but that are also capable of addressing multiple facets of a problem.

An example is the assessment of pain reduction, which might not only be assessed in terms of patient self-report but also in terms of reduced pain medication use, increased frequency of use of an affected limb and/or changes in autonomic arousal. It is also desirable to have follow-up data in order to ascertain the stability of treatment effects over time. However, obtaining follow-up data is complicated by the fact that many problems of interest to researchers, e.g. depression, have naturally varying courses over time, and so single-point follow-up assessments may be misleading. On the issue of how long to maintain follow-ups, Chambless and Hollon (1998, p. 10) suggest that 'those disorders that tend to follow a more variable course require longer follow-ups ... [and] strong effects are likely to require less time to be detected than weak ones, particularly if they are stable over time'.

A final advantage of RCTs is their reliance on manualized treatments. The use of treatment manuals in supporting research has been adopted by the APA Task Force on Promotion and Dissemination of Psychological Procedures as a requirement for a therapy to be considered for the list of empirically supported therapies (Chambless *et al.*, 1996). Use of manuals ensures

better research design and interpretable results, and also allows others to know what the treatment actually entailed. Chambless *et al.* (1996) provide an example of the problem of classifying a treatment as 'psychodynamic'—does that refer to Supportive Expressive Psychotherapy as described by Luborsky (1984) or Davanloo's (1980) short-term dynamic therapy? Without the existence of a manual it is unclear what is meant by the names given to particular treatments—or as Chambless *et al.* (1996, p.11) express it: 'the brand names are not the critical identifiers ... the manuals are.'

Chambless and Hollon (1998, p. 11) also allow for one exception for the requirement of a manual: when a treatment 'is relatively simple and is adequately described in the procedure section of the journal article testing its efficacy'. While manuals may contain detailed session-to-session descriptions of technique, it is not necessary. For example, a manual may also consist of a description of broad principles of treatment and examples that clarify those principles. However, regardless of the form of manual used, it will typically need to be supplemented by supervision and training. In addition to initial training, there is a need to determine if the treatments were administered adequately, particularly if a therapist is inexperienced with a particular treatment modality or has allegiance to another school of therapy. Ideally, one would want to evaluate a therapist's adherence to a treatment protocol and his or her competence in delivering it. Unfortunately, competence (or the quality of treatment) is markedly more difficult to assess than adherence, and currently the inclusion of tests for either adherence or competence is not a requirement for the determination of a treatment's efficacy.

Chambless and Hollon (1998) noted other important factors to consider when determining if there was evidence to label a treatment as 'empirically supported'. Caveats on data analysis included the need for an *a priori* rationale for statistical tests, the importance of intention-to-treat analyses when there are differing rates of attrition from conditions, and the need to test for therapist or site effects so as to enhance the generality of findings. In the not-infrequent case of contradictory findings, they allowed for well-designed studies to 'carry the day' if they point

in one direction and poorly designed studies point in another (p. 13). If studies are equally rigorous, then it is necessary to consider the preponderance of the evidence, but, if results are truly mixed, a conservative conclusion is advised. Meta-analyses may also shed further light on conflicting results.

However, despite the obvious strengths of RCTs as a means of evaluating the efficacy of various treatments, concerns have been raised regarding the need also to consider the effectiveness of a treatment. Seligman (1995, 1996) has argued that RCTs capture neither the reality nor the richness of actual clinical practice. He states that 'the efficacy study is the wrong method for empirically validating psychotherapy as it is actually done, because it omits too many crucial elements of what is done in the field' (1995, p. 967). Specifically the ways that psychotherapy as practiced in the field differs from psychotherapy in efficacy studies are that (1) it is generally not of fixed duration; (2) it is self-correcting and not confined to a limited number of techniques; (3) patients enter therapy by active shopping rather than random assignment; (4) patients usually have multiple problems; and (5) therapists are typically concerned with improvement in general functioning rather than solely symptom reduction.

Many practitioners who are presented with the results of RCTs and effectiveness studies may feel that research findings tell them little of value for their actual daily practice. Critics of current research often raise the question of whether or not there are immediate practical benefits to the pursuit of psychotherapy research. If our goal is to apply our knowledge to the assessment and treatment of patients' presenting problems, then is the proof not in the pudding? Do experienced clinicians need research findings to tell them how to do a better job? Can the nomothetic emphasis in outcome research provide meaningful and practical advice pertinent to an actual client presenting with a particular problem to a specific therapist? It is easier for clinicians, after years of practice, to feel confident in claiming that they know what works 'on the basis of experience'.

Unfortunately, assessing outcome and making causal attributions regarding what elements of therapy were responsible for change is wide open

to human error. Clinicians are human and thus prone to common biases in judgment, attribution, decision-making, inferences and perception (Kahneman *et al.*, 1982; Fiske and Taylor, 1995). Continued success over the years may lead clinicians, in the absence of control comparisons, to mistakenly attribute client improvement to specific therapist skills and techniques rather than, for example, client variables, initial severity of the presenting problem, historical and social factors and general therapeutic factors such as provision of hope and empathy (Kendall, 1998).

With these points in mind, the field of research on clinical hypnosis will now be brought into focus through consideration of a sample of the outcome research that has been done to date. The scope of this chapter is not wide enough to provide an overview that would be both comprehensive and satisfying, so areas have been selected that are broadly representative of the wider body of research on hypnosis. The reader is thereby offered the benefit of greater detail and some room for the finer subtleties inherent in clinical research. The three general areas of study that will be focused on are: pain, health and (to some degree) psychotherapy. Pain is representative of a widely studied problem; health is an area of fast-developing application and study; and psychotherapy, unfortunately, is an example of how much remains to be done. What has been answered and what lies unanswered in these three research areas is true of other areas of study on clinical hypnosis, and so hopefully the following overview will illuminate a way forward for future researchers.

29.3. Pain

The use of hypnosis in alleviating pain has a history of extensive study and application. In 2001 Russell Hawkins published a systematic meta-review on the effectiveness of hypnosis in pain relief, and in this paper he concentrated on review articles in order to draw conclusions about the efficacy of hypnotic analgesia. Review articles were subjected to a quality assessment algorithm developed by Oxman and Guyatt (1991). This assessment consisted of 10 criteria applied to reviews; however, Hawkins omitted the tenth question due to its subjective component

regarding the overall quality of the review. The other nine questions require a simple yes/no answer and so result in a quality 'score' ranging from 0 to 9. The questions are presented in Table 29.2.

Of the 23 reviews of the pain literature that Hawkins included in his meta-review, only 6 obtained a quality score of 7 or greater: five studies (Kirsch *et al.*, 1995; Sellick and Zaza, 1998; Milling and Costantino, 2000; Montgomery *et al.*, 2000; Pan *et al.*, 2000) obtained a score of 7, and Talley *et al.* (1996) obtained a score of 8. The remaining quality scores were one 4, two 3s, one 2, ten 1s and three 0s. Using an arbitrary cut-off score of 7 to assess the reviews, Hawkins concluded that 'level I evidence (evidence from a systematic review of all relevant trials) exists for the efficacy of hypnosis on pain' and 'also exists for the effects of hypnosis on pain related to cancer/invasive medical procedure', but that there was a 'conspicuous lack of Level I evidence for the application of hypnosis in the treatment of ... low back pain, headache, childbirth and burn pain' (p. 67). Some of the high-quality reviews that he cites are worth further scrutiny.

Table 29.2 Criteria from the Oxman and Guyatt (1991) index for assessing the quality of review articles (taken from Hawkins, 2001)

1. Were the search methods used to find the evidence on the primary question(s) stated?
2. Was the search for evidence reasonably comprehensive?
3. Were the criteria used for deciding which studies to include in the review reported?
4. Was bias in the selection of studies avoided?
5. Were the criteria for assessing the validity of the included studies reported?
6. Was the validity of all studies referred to in the text assessed using appropriate criteria?
7. Were the methods used to combine the findings of the relevant studies reported?
8. Were the findings of the relevant studies combined appropriately relative to the primary question?
9. Were the conclusions made by the author supported by the data and/or analysis reported in the overview?

29.3.1. Sellick and Zaza

From the results of a search (and utilizing the terms hypnosis, pain and cancer) of the MEDLINE, CINAHL and PsychoINFO Lit databases for RCTs of nonpharmacological treatments of cancer pain, Sellick and Zaza (1998) were able to find six studies of hypnotic analgesia for cancer pain. Three of the studies were on adult patients with cancer-related pain: Spiegel and Bloom (1983) and Syrjala *et al.* (1992, 1995); and three were with children or adolescents with cancer-related pain: Zeltzer and LeBaron (1982), Katz *et al.* (1987) and Wall and Womack (1989). The Spiegel and Bloom (1983) study focused on chronic pain, but the remaining five studies considered acute procedural pain.

Sellick and Zaza evaluated these studies using criteria developed by Detsky *et al.* (1992). Their evaluation indicated that all six studies randomly assigned patients and also adequately described the randomization. They also concluded that there was no bias in the treatment assignment. All six studies included a description of the criteria for measuring outcome and those criteria were partially objective. In only two studies (Katz *et al.*, 1987; Wall and Womack, 1989) were the outcome assessors blind to the treatment received. Inclusion/exclusion criteria were clearly defined for five studies and partially defined for the Zeltzer and LeBaron (1982) study. For all the studies, the authors were able to determine how many patients were excluded from the trial, and all six studies fully described the therapeutic regimen for treatment and control groups. The statistical analyses were also deemed appropriate for all the studies, although none of the studies offered a sample size justification before the research was conducted.

The Spiegel and Bloom (1983) study involved 54 female patients with metastatic breast cancer, and the results of the study indicated that patients who conducted 5–10 min of self-hypnosis reported the lowest mean pain sensation relative to a control group and a second treatment group (supportive group therapy without hypnosis). Both treatment groups reported lower pain and suffering, and there was no significant difference between the treatment groups for frequency and duration of pain.

Syrjala *et al.* (1992) randomly assigned 45 patients undergoing bone marrow transplant to one of four groups: usual treatment, therapist contact control, cognitive-behavioral training without imagery, and hypnosis. Relative to all other groups, the patients in the hypnosis group reported significantly less oral pain. Syrjala *et al.* (1995) again looked at patients undergoing bone marrow transplant. Ninety-four patients were assigned to one of four groups: usual treatment, therapist contact, cognitive-behavioral therapy (CBT) with imagery, and hypnosis (relaxation and imagery). Only patients in the CBT group and the hypnosis group reported a significant reduction in pain. While the authors concluded that CBT 'did not provide any additional benefit beyond that of the relaxation and imagery component alone' (p. 13), it could also be argued that hypnosis failed to deliver any additional effect beyond that of CBT.

Zeltzer and LeBaron (1982) randomly assigned 27 children and adolescents undergoing bone marrow aspirations and 22 children and adolescents undergoing lumbar puncture to either a hypnosis treatment group or a nonhypnotic behavioral distraction group. For the bone marrow aspirations, both treatment groups achieved a reduction in pain, but the hypnosis treatment produced a larger effect (decrease of 1.5 versus 0.66 on a 5-point scale). Also significant anxiety reduction was only evident in the hypnosis treatment group. For the lumbar puncture patients, only the hypnosis treatment group (decrease of 1.71) achieved a significant decrease in pain. Both treatments produced a decrease in anxiety, although again the participants in the hypnosis treatment group achieved a greater reduction in anxiety (decrease of 1.36 versus 0.66 on a 5-point scale).

Katz *et al.* (1987) studied 36 children undergoing bone marrow aspirations. The children were randomly assigned to one of two groups: hypnosis or play. These two treatments were equally effective in reducing pain and fear, although there was an interaction effect for gender and treatment, with boys benefiting more from play and girls more from hypnosis. Wall and Womack (1989) found in a study of 20 pediatric patients undergoing bone marrow aspirations or lumbar puncture that there was a significant decrease in pain for both the hypnosis treatment group and

the active cognitive strategy treatment group. Sellick and Zaza concluded that there was 'much support for the specific use of hypnosis in managing pain associated with medical procedures and some support for its use in managing chronic cancer pain' (p. 13).

29.3.2. Montgomery *et al.*'s meta-analysis

Montgomery *et al.* (2000) conducted a meta-analysis of 18 studies, that included both clinical and patient samples. The stated aims of their study were: '(a) to determine the percentage of people who benefit from hypnoanalgesic suggestions, (b) to explore whether results based on empirical work in the laboratory generalize to medical settings and whether the effects of hypnosis are limited to a particular segment of the population (e.g., highly suggestible individuals), and (c) to explore whether the effects of hypnoanalgesic suggestions are less effective, equally effective, or more effective than other psychological interventions (e.g., relaxation training) in providing pain relief' (p. 138). In pursuing the first two aims, they limited the sample to studies 'that directly compared hypnotherapy to no-treatment, wait list, or standard-treatment control groups on measures of pain' (p. 139). Twenty-seven effect sizes derived from 18 studies were used to achieve their first aim; and the second aim of comparing clinical and student samples compared 10 and 17 studies, respectively. For the comparison to other psychological interventions, they included studies without control groups, requiring an additional 27 effect sizes to be calculated.

In selecting their studies, the authors relied on previous reviews (Spinhoven, 1988; Ellis and Spanos, 1994; Genius, 1995; Holroyd, 1996; Chaves and Dworkin, 1997) and on a PsycLIT database search using the search terms *hypnosis and pain*, *hypnosis and analgesia*, *hypnotherapy and pain*, and *hypnotherapy and analgesia*. To the studies obtained from their search, they applied the following criteria: '(a) a hypnotic intervention intended to reduce pain was administered to at least one group of studies; (b) the inclusion of a no-treatment or standard-treatment control group; and (c) sufficient data ... to allow calculation of effect sizes' (p. 139). This resulted in the

calculation of 41 effect sizes from a total of 18 studies and 933 participants. Random assignment was utilized in nearly all the studies, and the exceptions were sequential assignment to counter-balance for order of group assignment between therapists (Edelson and Fitzpatrick, 1989); alternate placement in one of three treatment groups (Elton *et al.*, 1988); and use of odd and even medical chart numbers for group assignment (Weinstein and Au, 1991).

On the basis of their analysis, the authors calculated that there was a moderate to large effect size, $d = 0.74$ and even with the use of a conservative estimate of effect size whereby individual effect sizes were weighed by the size of the sample, the effect remained significant ($D = 0.67$, $\text{Var}D = 0.26$, $P < 0.01$). They concluded that 'the average participant treated with hypnosis demonstrated greater analgesic response than 75 percent of participants in standard and no-treatment control groups' (p. 141). They also found that participants in clinical studies ($d = 0.80$, $D = 0.74$, $\text{Var}D = 0.33$) did not differ significantly from participants in experimental studies ($d = 0.70$, $D = 0.64$, $\text{Var}D = 0.24$) in the degree of pain relief they experienced.

They also found differences in hypnotic analgesic effects related to participant's level of suggestibility, which revealed that individuals who were high hypnotizables obtained significantly more relief than those who were low hypnotizables. However, no such statistical difference was found either between high and moderate hypnotizables or between moderate and low hypnotizables. While cautious about inferring too much from these between-group differences due to a limited sample size for high and low hypnotizables, the authors noted that the majority of people (i.e. those outside the low hypnotizable range) could benefit from hypnotic analgesia for pain.

The authors concluded that their results supported the view of hypnotic analgesia as a 'well-established treatment' according to the Chambless *et al.* (1998) criteria, and they argued that while most individual studies had a small sample size ($n < 30$), the total N of their meta-analysis included more than 800 participants. The Chambless *et al.* (1998) criteria also require adequate specification of the sample characteristics, use of treatment manuals and that effects be demonstrated by at least two different

research groups. Montgomery *et al.* noted that samples were adequately defined and that studies had been conducted by more than one research group. However, there was a marked absence of treatment manuals used in the studies, and the authors cited Chambless and Hollon's (1998) allowance for relatively simple interventions to be exceptions to the manual, as support for the view that hypnotic analgesia be considered a well-established treatment.

29.3.3. Patterson and Jensen's review

A more recent review not included in the Hawkins's paper was one by David Patterson and Mark Jensen (2003) which focused on randomized, controlled *clinical* studies. Nineteen studies were used by the authors in their review on the application of hypnosis to acute pain, and they summarized a further 12 studies in their review of chronic pain. Of the 19 studies on the use of hypnosis for the treatment of acute pain, only four assessed hypnotizability and only one was manualized. Sixteen utilized random assignment, and all the studies included control conditions. Twelve studies were conducted with adults only; five with children only; and two with both. For the 12 studies on chronic pain, five assessed hypnotizability and none was manualized. Ten studies included randomized assignment in their design, and each study had at least one control condition. All 12 studies were with adults.

29.3.3.1. Acute pain

Six of the 19 clinical studies on acute pain focused on invasive medical procedures: Weinstein and Au (1991), Lambert (1996), Faymonville *et al.* (1997), Lang *et al.* (1996, 2000) and Syrjala *et al.* (1992). It is noteworthy that many of these studies employ multiple outcome measures, and they frequently include objective measures. For example, Lang *et al.* (2000) demonstrated not only reduced anxiety for patients in the hypnosis condition, but also reduced drug use, fewer occurrences of hemodynamic instability and reduced procedure time. A later follow-up paper on this study showed a savings of \$338 per case with hypnosis relative to the cost of standard sedation (Lang and Rosen, 2002).

In their study of patients undergoing angioplasty, Weinstein and Au (1991) compared 16 patients receiving pre-surgery hypnosis with 16 patients receiving standard treatment. Patients receiving hypnosis allowed the surgeon to keep the balloon catheter inflated for a 25 percent longer duration and they also required significantly fewer opioid analgesics during the surgery. Lambert (1996) looked at the effects of hypnosis in a group of 52 children aged between 7 and 19 years who were undergoing a variety of surgical procedures. Relative to an attention control group, the 26 children who were assigned to the hypnosis group reported less pain and had shorter hospital stays, although there were no differences in length of surgery, length of anesthesia or medication consumption.

Faymonville *et al.* (1997) in a study of patients undergoing elective plastic surgery compared 31 patients receiving hypnosis with 25 patients receiving a stress reduction technique. The hypnotic induction varied and the term hypnosis was never used to describe the experimental treatment. Patterson and Jensen (2003) summarized the positive effects for the hypnosis group relative to the stress reduction group. These effects for the hypnosis included less analgesia and sedation, less reported pain and anxiety, increased satisfaction and perceived control, as well as lower blood pressure, heart rate and respiration rate.

Lang *et al.* (1996) randomly assigned 16 patients undergoing invasive medical procedures to a condition that involved relaxation training and guided imagery for an induction of self-hypnosis. Compared with 14 patients in a standard control condition, the patients receiving hypnosis used less pain medication and reported less maximal pain. They also demonstrated greater physiological stability during the procedures. There were no significant differences between the two groups for anxiety, blood pressure or heart rate; and patients' hypnotizability as measured by the Hypnotic Induction Profile (Spiegel and Spiegel, 1978) did not correlate with outcome.

Lang *et al.* (2000) in a study of patients undergoing cutaneous vascular and renal procedures compared 82 patients randomly assigned to a self-hypnotic relaxation condition with 79 patients in a standard care condition and

80 patients in a structured attention condition. This study was the one clinical study on the use of hypnosis for acute pain that utilized a treatment manual. The authors found that patients in the hypnosis group had shorter procedure times and greater hemodynamic stability than patients in either the attention control or standard care condition. Patients in both the hypnosis and the attention control conditions had less drug use than patients in the standard control condition.

In providing an extensive review of the application of hypnotic analgesia for acute pain, six studies were also reviewed that addressed the use of hypnosis for burn care pain. The first cited burn study (Wakeman and Kaplan, 1978) showed that patients receiving hypnotic analgesia required fewer analgesic drugs than patients in an attention control group. However, a variety of hypnotic techniques were employed, thus obfuscating the precise mechanism of effect.

The results of four studies based on the rapid induction analgesia technique of Barber (1977) were also reviewed by Patterson and Jensen (2003): Patterson *et al.* (1989, 1992); Everett *et al.* (1993); and Patterson and Ptacek (1997). The first study, by Patterson *et al.* (1989), showed a reduction in pain for patients receiving hypnosis relative to the control group, but this study did not include random assignment. The second study, by Patterson *et al.* (1992), included random assignment and again showed a reduction in pain for the hypnosis group relative to the control, even though the attention control condition was labeled and presented to patients as hypnosis. This implies that the observed effects for hypnotic treatment were not due solely to expectancy or demand characteristics.

The third study, Everett *et al.* (1993), did not show an effect for hypnosis and, by way of explanation for this inconsistency, Patterson and Jensen (2003) argued that it may have been that the initial pain ratings were not high enough. They offered support for this point by noting how in the fourth study, Patterson and Ptacek (1997), an effect was found for hypnotic analgesia but only for those patients with high initial levels of pain. While it could be argued that the effect of hypnotic analgesia on patients with high levels of initial pain was due

to a regression to the mean, the effect was relative to patients in the control group who also had high initial levels of pain. Patterson and Jensen suggested that this increased effect for hypnotic analgesia on patients with high initial pain may be due to increased motivation and dissociation caused by acute distress, implying a specific mechanism by which hypnosis acts to reduce extreme pain effectively and which would favor the use of hypnosis over alternative psychological interventions. Given that a focus of the APA Division 12 task force on empirically supported treatments is on specificity, the pursuit of further research on the applicability of hypnosis to extreme levels of acute pain is warranted.

In summarizing the studies on acute pain, Patterson and Jensen noted that in eight of those studies, eight showed that hypnosis was more effective in reducing pain than no treatment, standard care or an attention control condition. Three studies showed hypnosis to be no better than control conditions (although one of these studies did show an effect for high hypnotizables) and one study showed mixed results due to a difference in observed behaviors and self-report. In the eight studies that compared hypnosis with another viable treatment, hypnosis was never shown to be inferior to other treatments and it was shown to be a superior treatment in four instances.

29.3.3.2. Chronic pain

In addition to a review of studies on hypnotic analgesia for acute pain, Patterson and Jensen (2003) also reviewed studies that involved the use of hypnosis for chronic pain, which they defined as 'pain that persists beyond the healing time needed to recover from an injury (often operationalized as pain that lasted for more than three months) or as pain associated with an ongoing chronic disease or degenerative process' (p. 507). Early reviews (Turner and Chapman, 1982; Malone and Strube, 1988) struggled to identify RCTs; only one study was cited that indicated that the rate of improvement for hypnotic treatment was 13 percent, which compared poorly with rates of 68 percent for autogenic training and 84 percent for biofeedback-assisted relaxation training, and the average 77 percent improvement rates for no-treatment conditions!

Eight studies were reviewed in order to assess the effectiveness of hypnosis for reducing headaches. In comparing hypnotic treatment with two forms of biofeedback, in a total sample of 33 patients, Andreychuk and Shriver (1975) found no differences between the three conditions, but they did find that highly hypnotizable patients fared better across all treatment conditions. Anderson *et al.* (1975), in a study of 47 patients, found that relative to patients in a medication condition (prochlorperazine), patients receiving hypnotic treatment reported fewer headaches per month, fewer grade 4 headaches and a greater rate of remission. Schlutter *et al.* (1980) found that in a group of 48 patients there were equivalent effects for reduction of headache frequency across three conditions: hypnosis, EMG biofeedback and biofeedback with progressive relaxation. Similarly, Friedman and Taub (1984) found that all three treatment groups in their study—hypnotic induction only, hypnotic induction and thermal imagery, and thermal biofeedback—showed equivalent improvement rates relative to a control condition.

Melis *et al.* (1991), in a study of 26 patients randomly assigned to either a hypnosis condition or wait-list control, found that patients in the hypnosis condition reported fewer headaches, less headache hours and less days on which they experienced a headache. In two studies comparing hypnosis and autogenic training, with samples of 56 and 146 patients, respectively, Spinhoven *et al.* (1992) and ter Kuile *et al.* (1994) found the treatment effects for hypnosis to be equivalent to autogenic training, while both hypnosis and autogenic training were effective relative to a wait-list control group. In a study of 79 patients, Zitman *et al.* (1992) compared autogenic training with 'future-oriented' hypnosis (which had patients imagine a future point in which they had less pain), but they did not label the hypnotic treatment as hypnosis. After 6 months, all patients in the study were re-administered one treatment: future-oriented hypnosis, but this time it was clearly labeled as hypnosis. All treatments showed an equivalent effect for reducing headaches relative to an attention control group; however, at 6-month follow-up, those patients practicing treatment that was explicitly labeled hypnosis showed the greatest improvement.

Patterson and Jensen (2003) also reviewed four studies on other forms of chronic pain, including the Spiegel and Bloom (1983) study on women with chronic cancer pain already summarized above. One study on refractory fibromyalgia (Haanen *et al.*, 1991) found that hypnosis was more effective than physical therapy in reducing muscle pain, fatigue, distress and sleep disturbances, and that these differences were maintained at follow-up. However, the hypnosis and control conditions were not equivalent in terms of time and patient contact. A study by Melzack and Perry (1975), while finding that hypnosis might have a positively additive effect when combined with alpha biofeedback, was also limited by an inadequate design that lacked a placebo or a no-treatment condition. Finally, Edelson and Fitzpatrick (1989), in a study of 27 patients with mixed etiologies for chronic pain, found that patients receiving CBT showed significant increases in walking and decreases in sitting relative to both the attention control and the hypnosis groups. Patients in the hypnosis condition showed improvement relative to the attention control group in subjective pain ratings only.

Summarizing their review of research on the effectiveness of hypnotic treatment for chronic pain, Patterson and Jensen (2003) concluded that ‘compared with no-treatment, standard, or attention conditions, hypnotic analgesia procedures result in significantly greater reductions in a variety of measures of pain’ (p. 512). However, they also noted that, unlike their findings on acute pain, hypnosis for chronic pain was less often found to be superior to alternative treatments. Yet, as with acute pain, they were also unable to find research that supports the possibility that hypnosis was ‘less effective than any other treatment for reducing pain’ (p. 512).

29.3.4. Review of hypnosis used for pain management in labor

Smith *et al.* (2006) recently completed a review of complementary and alternative therapies for pain management in labor and they included five studies on the use of hypnosis for pain reduction. The five studies on hypnosis for labor pain were Rock *et al.* (1969); Freeman *et al.* (1986); Harmon *et al.* (1990); Martin *et al.* (2001);

and Mehl-Madrona (2004). Rock *et al.* (1969) randomized 40 women to hypnosis or standard care. Freeman *et al.* (1986) randomized 82 women to a self-hypnosis or control group. Harmon *et al.* (1990) randomized 60 women to a self-hypnosis group or a control group that included standard relaxation, distraction and breathing techniques. Martin *et al.* (2001) randomized 47 teenagers to self-hypnosis or a control group that involved supportive counseling. Mehl-Madrona (2004) randomized 520 women to hypnosis or supportive psychotherapy.

Smith *et al.* (2006) reported that the Rock *et al.* (1969) study found that women in the hypnosis group used less pharmacological pain relief compared with the control group. Freeman *et al.* (1986) found that women in the hypnosis group reported more satisfaction with pain relief even though there was no difference in the use of pharmacological pain relief in comparison with the control group. Harmon *et al.* (1990) also reported less use of narcotics for pain by women in the hypnosis group when compared with the control group. Martin *et al.* (2001) found that women in the hypnosis treatment used less anesthesia than those in the control group, and Mehl-Madrona (2004) also reported less use of pharmacological pain relief by women in the hypnosis treatment. Freeman *et al.* (1986), Harmon *et al.* (1990) and Mehl-Madrona (2004) also all found that women in the hypnosis treatment were more likely to have a spontaneous vaginal birth than women in the control groups.

Smith *et al.* (2006) concluded that ‘the data available suggest hypnosis reduces the need for pharmacological pain relief in labour; reduces the requirements for drugs to augment labour; and increases the incidence of spontaneous vaginal birth’ (p. 10). Recommendations for further study of the use of hypnosis for relieving labor pain included investigation of group versus individual training in hypnosis; comparison of recorded versus live hypnosis; and long-term follow-up for post-natal depression and anxiety.

29.3.5. Summary of research on hypnosis for treatment of pain

In taking these reviews as a whole (Sellick and Zaza, 1998; Montgomery *et al.*, 2000; Patterson

and Jensen, 2003; Smith *et al.* 2006), the consistency of their findings spread across 2–3 year intervals provides compelling evidence for hypnosis as a probably efficacious treatment for pain. However, two methodological matters need to be addressed by future researchers. First the typical sample size for pain studies falls short of the optimal 25–30 per condition suggested by Chambless *et al.* (1998). The case could be made that Montgomery *et al.*'s (2000) meta-analysis provides a sufficient sample size when several studies are pooled together. Still, our confidence in the effect size of the treatment would be enhanced by more high-quality studies with sufficient sample size. Second, there is a dearth of studies using manualized interventions. Of the 19 studies on acute pain cited by Patterson and Jensen (2003), only one was manualized. None of the chronic pain studies was manualized. Though Montgomery *et al.* (2000) made the argument that hypnosis could be considered a 'simple' treatment thereby foregoing the Chambless *et al.* (1998) requirement of a manual, the criteria still require that there is sufficient detail provided in the method section for replication.

29.4. Health-related treatments

There is an extensive body of research on the use of hypnosis for health-related problems not primarily involving pain. While it would appear to make intuitive sense to apply hypnotic treatment to health problems, and many clinicians who use hypnosis can recount anecdotal tales of its efficacy in this realm, it is worth considering the results of a recent study from the UK on this topic. Dobbin *et al.* (2004) studied the impact of hypnosis on the health status of patients from a pool of 14 general medical practices in Edinburgh.

Patients were invited to attend a free 'hypnosis clinic' and, of the 400 referrals, 300 patients contacted the clinic for an appointment, and 244 patients completed the two basic treatment sessions provided by the clinic. All patients were given the Medical Outcomes Study Short-From-36 Health Survey UK version (SF-16; Coulter and Wright, 1993) which is 'a general health

status measure that assesses eight domains: physical functioning, role functioning due to physical problems (physical role), bodily pain, general health, vitality, social functioning, role functioning due to emotional problems (emotional role), and mental health' (Dobbin *et al.*, 2004).

As described by Dobbin *et al.* (2004), differing treatments were offered to patients falling into one of three groups on the basis of their presenting problem: medical, mental health and smoking. There was no random assignment to groups, nor was a control group used. However, the results in terms of improvement in scores on the SF-16 at a 6-week follow-up were intriguing. Significant improvements at the 1 percent level were evident in the SF-16 domains of 'emotional role', 'social function', 'mental health' and 'energy' for patients in all but the smoking subgroup.

These findings are intriguing, but there are a number of RCTs which provide a more certain index of efficacy in the area of health-related problems. Here we review three applied domains of hypnosis: smoking cessation, enhancement of immune function and irritable bowel syndrome (IBS).

29.4.1. Smoking

Smoking is a serious health risk with associated increases in the frequency of cancers, coronary heart disease and stroke among those who smoke, and 430,000 yearly deaths in the USA can be attributed to smoking (US Department of Health and Human Services, 1990). A meta-analysis of nonhypnotic smoking cessation treatments (Fiore *et al.*, 1996) found abstinence rates of 12.1 percent for brief counseling (<10 min) and 18.7 percent for counseling taking longer than 10 min compared with a no-contact reference group abstinence rate of 8.8 percent. This meta-analysis also indicated that relative to placebo treatment conditions, transdermal nicotine patches doubled the quit rate. Hurt *et al.* (1997) found that at the end of a 7-week treatment with bupropion therapy participants in the treatment condition had abstinence rates of 44.2 percent versus 19 percent for the placebo condition, and at 12-month follow-up these rates were 23 and 12 percent, respectively. So how does hypnosis measure up?

Green and Lynn (2000) reviewed 59 studies that focused on the use of hypnosis for helping individuals stop smoking. Thirty-seven of the studies reviewed were clinical reports, i.e. studies that lacked no-treatment control groups or alternative treatment groups. The authors noted that it was difficult to evaluate those studies for a variety of reasons, including the absence of standardized scripts; variable number of sessions across different patients within a study; the use of self-hypnosis outside sessions; the use of adjunctive interventions; and the use of a bewildering array of varied hypnotic techniques both within and across studies. The abstinence outcomes ranged from 0 to 88 percent, and further complicating the interpretation of these results is the finding that only two of these studies relied on biochemical markers to determine that patients had indeed quit smoking.

A further six studies were reviewed that failed to assign participants randomly to conditions. None of these six studies used a biochemical marker to assess abstinence. Four of the studies assessed outcome at a single point after treatment, and two found hypnosis to be more effective than no treatment (Javel, 1980; Bayot *et al.*, 1997), one found that hypnosis as an adjunctive technique with CBT was more effective than a wait-list control condition (Jeffrey *et al.*, 1985), and the fourth study (Barabasz *et al.*, 1986) indicated that an alternative treatment was more effective than hypnosis. One study (Lambe *et al.*, 1986) that initially showed hypnosis to be more effective than minimum education failed to show any differences at 6 and 12 months follow-up. Shewchuk *et al.* (1977) showed that group therapy and hypnosis were both producing higher rates of abstinence than for 'nonattenders', but these differing rates of abstinence between participants in the hypnosis condition and nonattenders disappeared at the 5- and 12-month follow-up points.

A further 13 studies that randomly assigned participants to conditions were reviewed. However, Green and Lynn (2000) noted that these studies lacked sufficient sample size (25–30 as per Chambless and Hollon, 1998) to allow for an adequate evaluation of treatment efficiency. Five of these studies (Cornwell *et al.*, 1981; Hyman *et al.*, 1986; Spanos *et al.*, 1992, Studies 1–3) used biochemical markers to determine

abstinence, but in one case (Spanos *et al.*, 1992, Study 3) these data were not reported and in another (Hyman *et al.*, 1986) they were collected only as pre-treatment measures. From these 13 studies, Green and Lynn concluded that five studies confirmed that a hypnosis condition was superior to a wait-list or no-treatment control condition (Pederson *et al.*, 1975, Study 1; MacHovec and Man, 1978; Cornwall *et al.*, 1981; Hyman *et al.*, 1986; Williams and Hall, 1988).

Four studies (Spanos *et al.*, 1992, Studies 1–3; Spanos *et al.*, 1995) obtained equivalently low abstinence rates across all conditions (hypnotic, nonhypnotic and control conditions), although Green and Lynn (2000) noted the difficulty of disentangling experimenter and treatment effects as one experimenter per condition was used across most, if not all of the studies. MacHovec and Mann (1978) showed hypnosis to be superior to acupuncture, and Hyman *et al.* (1986) showed it to be superior to focused smoking and as effective as attention placebo. MacHovec and Man (1978) and Williams and Hall (1989) showed hypnosis to be superior to attention placebo. Finally, Pederson *et al.* (1975) found that a combination of hypnosis and counseling produced better abstinence rates than either counseling or hypnosis alone. However, rapid smoking appears to be superior to hypnosis as indicated by the results of Perry *et al.* (1979) and a trend in the data from Barkley *et al.* (1977).

Three out of the total of 59 studies reviewed by Green and Lynn were considered to have rigorous experimental designs as per the criteria of Chambless and Hollon (1998). The first of these studies conducted by Schubert (1983) randomly assigned 87 participants from a sample of volunteers and undergraduate students to a hypnotic, systematic desensitization, or a wait-list control condition. The hypnotic and systematic desensitization condition contained the same suggestions and differed only in that the relaxation portion of the systematic desensitization condition was replaced by a hypnotic induction. Perhaps not surprisingly, the two treatment conditions were statistically equivalent in terms of abstinence rate (41 percent for hypnosis and 38 percent for systematic desensitization), but both were higher than the rates of the wait-list control group (7 percent).

In a study of 168 volunteers, Rabkin *et al.* (1984) randomly assigned participants to individual hypnotherapy, group behavioral treatment, group health education or a wait-list control group. At 3 weeks follow-up, all the treatments were statistically equivalent in terms of their abstinence rates (based on a biochemical marker) and all were significantly higher than the abstinence rate of 0 percent in the wait-list control. At the 6-month follow-up, the treatments remained equivalent in terms of self-reported abstinence: 19 percent for hypnosis; 17 percent for behavioral treatment; and 22 percent for health education. In the third study reviewed by Green and Lynn (2000), Valbo and Eide (1996) randomly assigned 158 pregnant women smokers either to two sessions of hypnosis, 2 weeks apart, or to a routine care control condition. Results from the 130 women completing the study showed an 8 percent abstinence rate for women in the hypnosis condition and a 10 percent abstinence rate for women in the control condition.

29.4.1.1. Summary of research on hypnosis for smoking cessation

Green and Lynn (2000) concluded that ‘hypnotic interventions appear to be more effective than no-treatment or waiting-list control conditions’ (p. 214). Though they concluded that ‘hypnosis can, with some justification, be regarded as possibly efficacious’ (p. 214), they noted that Chambless and Hollon (1998) did not consider evidence from studies on smoking cessation that failed to contain a biochemical marker. Thus, it is imperative that researchers include a biochemical marker in future studies. Only one of the three ‘rigorous experimental studies’ described in their review included a biochemical marker to assess abstinence.

Recommendations by Green and Lynn (2000) for future research included use of random assignment, increased sample size, use of manualized treatments, careful delineation of the population under study and the inclusion of hypnotizability measures. One may ask how far those recommendations have taken us. A recent promising study by Elkins and Rajab (2004) is to be commended for furthering the current understanding of the use of hypnosis for smoking cessation and the inclusion of a description

of specific suggestions used is of great clinical value. However, while it obtained impressive abstinence rates for a hypnosis treatment, it also lacked a control condition, studied only 30 smokers (of which 21 completed treatment), relied on self-report rather than biochemical markers, and did not measure hypnotizability.

29.4.2. Immune functioning

The immune system protects the body from disease by destroying pathogens that include bacteria, viruses, parasites and fungi. The immune system does so by responding to antigens that are found on the surface of pathogens. The cells of the immune system are white blood cells that are found in the bone marrow, lymph nodes, spleen, thymus, gastrointestinal tract, lung and skin. Miller and Cohen (2001) in a review of psychological interventions and the immune system note that the immune system can be assessed with either enumerative or functional measures.

Enumerative measures count the different components of the immune systems including ‘white blood cell populations (granulocytes, monocytes, lymphocytes, NK cells, B-lymphocytes, T-lymphocytes, helper T-lymphocytes, and suppressor/cytotoxic T-lymphocytes), antibody populations in the blood (immunoglobulins A, G, and M) and in saliva (secretory immunoglobulin A) and antibodies to specific pathogens (the Epstein–Barr [EBV] and herpes-simplex viruses [HSV])’ (Miller and Cohen, p. 48).

Functional measures assess how well the immune system works, and examples include ‘how effectively neutrophils can adhere to nylon fiber designed to simulate blood vessel walls’ and ‘people’s immune responses to antigens to which they are highly sensitive’ (Miller and Cohen, p. 48). Antigen response is assessed on the basis of the inflammatory response to a small amount of antigen being placed under the skin and then evaluating the response in terms of induration (swelling) and erythema (redness around the swelling). This response can be considered in relation to immediate-type hypersensitivity (ITH), such as an allergy test, and delayed-type hypersensitivity (DTH), such as the PPD test for tuberculosis.

Miller and Cohen speculated that hypnosis might act on the immune system in a manner similar to relaxation by alleviating 'stress-induced immune dysregulation' (p. 50), but that it might also modify biological processes so as to facilitate changes in the immune system more directly. Their meta-analysis of 59 trials and 2135 individuals included 18 studies involving hypnosis with immune suggestion (HWIS) interventions and four studies used multiple group designs that evaluated both relaxation and HWIS, allowing for a calculation of eight aggregate effect sizes. Criteria for inclusion in the meta-analysis were that the study was: (1) a true experiment involving random assignment to treatment and control conditions; and (2) had a multiple subject design.

Three significant effects were found: the first for the degree to which hypnosis could increase total secretory IgA [$r = 0.147$, 95 percent confidence interval (95% CI) = 0.01–0.28, $P < 0.05$]; the second for how hypnosis increased neutrophil adherence ($r = 0.503$, 95% CI = 0.27–0.68, $P < 0.001$); and the third for decreased ITH erythema ($r = 0.231$, 95% CI = 0.04–0.41, $P < 0.05$). All three studies, however, were subject to file-drawer problems and so the effects must be considered tentative. Furthermore, the effect for neutrophil adherence was associated with a significant heterogeneity statistic (6.17, $P < 0.05$). The ITH erythema effect was only obtained for the suppression of the redness around the swelling, but for not enhancement of the redness [$r = 0.00$, not significant (NS)]. There was no evidence for the utility of hypnosis in either suppressing or enhancing ITH induration (swelling), nor was there evidence that hypnosis could alter DTH, in terms of either induration or erythema.

Gruzelier (2002) reviewed the impact of hypnosis, relaxation and guided imagery on immunity and health, including studies by Whitehouse *et al.* (1996), Olness *et al.* (1989) and Ruzyla-Smith *et al.* (1995). Whitehouse *et al.* (1996) in a study of relaxation coupled with a hypnotic induction found that the 'quality of self-hypnosis relaxation exercises predicted both NKC [natural killer cell] number and functional activity during medical student exams' (Gruzelier, 2002, p. 153). Olness *et al.* (1989) found that 2 weeks of self-hypnosis coupled

with specific immune imagery significantly increased sIgA relative to nonspecific imagery. Ruzyla-Smith *et al.* (1995) compared self-hypnosis (in this instance rapid alert hypnotic induction for 5 min twice daily) with REST flotation and a no-treatment control group. They found 'higher B lymphocyte cell counts' for highly hypnotizable participants in the self-hypnosis condition (Gruzelier, 2002, p. 153) compared with participants in the REST flotation condition. Both self-hypnosis and REST flotation were associated with increased T-cell counts, but again only for highly hypnotizable subjects.

Gruzelier (2002) also summarized studies involving immune responses in asthmatic patients. A small sample size study by Laidlaw *et al.* (1994) indicated that hypnosis could enhance flare reaction size to histamine but not wheal sizes bilaterally in asthmatic patients. Gruzelier (2002) also described a two-part study by Fry *et al.* (1964) in which 18 patients were randomized to either a hypnosis group or a control group. Both groups were tested for sensitivity to four different strength allergens that were administered bilaterally to participants' arms. Two weeks after a pre-test measure was taken, the participants were again tested, but those in the hypnosis condition had received three training sessions that included hypnotic suggestion to enhance the skin reaction.

There was observable enhancement for all strengths of allergen with participants in the hypnosis condition, with significant enhancement occurring with the two lower strength allergens. In the second part of the study, Fry *et al.* (1964) randomly assigned 29 patients to three groups, all of which received three sessions of hypnosis, but with different instructions: 'bilateral nonreactivity, right arm nonreactivity, or no immune-related suggestion' (Gruzelier, 2002, p. 153). However, all groups showed enhanced bilateral reactions, despite other reports of successful localization (e.g. Black, 1963; Zachariae and Bjerring, 1990). Gruzelier (2002, p. 154) noted that 'the ability to restrict the control of the reaction by hypnosis to one limb, eludes reliable experimental control'.

One study on the effect of hypnosis on rheumatoid arthritis (Horton-Hausknecht *et al.*, 2000) is worth considering both for its

relatively strong design and its use of biochemical markers in conjunction with self-report measures of symptoms. Sixty-six patients who met the 1987 American Rheumatism Association criteria for rheumatoid arthritis were randomly assigned to an experimental group who learnt hypnosis ($n = 26$), a control group who learnt a relaxation/meditation technique ($n = 20$), or a wait-list control group ($n = 20$).

One flaw with the study, however, was that ‘a small number of patients had either a particular interest in the hypnosis or relaxation technique and were then allocated to the requested group’. No further mention is made by the authors of any analysis of potential differences in response to treatment between truly randomly assigned participants and self-selected participants, thus preventing an unequivocal conclusion to be drawn from their findings. The treatment used a standardized induction but ‘specific imagery was developed by each patient’, although ‘the details of the imagery were discussed ... to ensure it was fulfilling the goals of the study’ (p. 1093).

The dependent measures included seven self-report measures: joint pain, joint stiffness in the morning, joint swelling and four measures of the impact of arthritis on body functioning and daily activity. Baseline measures were obtained as well as measures in the 10th and final week of treatment and at 3- and 6-month follow-up. The biochemical measures taken were based on blood samples and included measures of erythrocyte sedimentation rate (ESR), C-reactive protein, hemoglobin and leukocytes. The three groups were comparable at baseline, and the outcome data showed that all three rheumatoid arthritis symptoms (pain, swelling and stiffness) improved significantly from baseline in the hypnosis group, but no significant changes in these symptoms were seen in the relaxation or wait-list control groups. Both the hypnosis and relaxation group showed improvement in daily living and body living, while the wait-list control group did not show any changes in the measures of function.

Interpretation of the blood parameters was more difficult, however, as only the median ESR levels in the hypnosis and the wait-list control group were above the normal level at baseline. The hypnosis group’s median ESR was significantly reduced, while the median level for the

wait-list control group significantly increased. Also, a further analysis indicated that ‘the intensity and number of clinical improvements in the data increased when patients practiced the hypnosis more often, including ESR values which increased from small clinical change to moderate change’ (2000, p. 1099). There were also no differences between the three groups in the amount of medications taken for rheumatoid arthritis and pain, suggesting that changes in medication were not the cause of the improvements seen in the hypnosis group.

29.4.2.1. Summary of research on how hypnosis affects the immune system

While the reviews of research regarding the impact of hypnosis on the immune system are certainly provocative, they are neither conclusive nor compelling. Their inconclusive nature relates to the limited quality and number of RCTs on the topic, but we would go further and state that, due to the complexity of the immune system, the clinical significance of hypnotic treatment is unclear. For example, does a measured increase in sIgA signify a lasting change? Is it an important change in terms of overall immune functioning? While researchers are attempting to answer these questions by using wider measures of health well-being, as long as our measurement of the immune system remains as unrefined as it is, research will be equivocal. The study by Horton-Hausknecht *et al.* (2000) is a promising step towards determining the clinical utility of hypnosis when used to treat an autoimmune inflammatory disease such as rheumatoid arthritis, but even this study uses questionable randomization and has a small number of participants (20) in the control groups.

29.4.3. Irritable bowel syndrome

While there are numerous other areas to which hypnosis can be applied (including palliative care, reduction of procedural distress, needle phobia, regimen compliance and specific conditions such as arthritis, hayfever, warts, hemophilia and asthma, to name but a few), the application of hypnosis to IBS presents us with examples of well-designed studies that speak directly to questions of efficacy and serve as

a model for further research. [The reader is referred to Pinnell and Covino's (2000) article on the more general use of hypnosis in medicine for further reading.]

IBS is a syndrome characterized by abdominal discomfort associated with changes in stool frequency and form, and it is a frequent diagnosis made by gastroenterologists (Langedluddecke, 1985). Patients suffering from IBS often fail to respond to medical treatments, and psychological factors have been posited as determinants in its pathogenesis (Langedluddecke, 1985). Talley *et al.*, (1996) conducted a review of studies that compared any type of psychological treatment for IBS with a control group. The studies reviewed were obtained from a comprehensive search of the MEDLINE database from 1966 to 1994 and the Psyclit database from 1974 to 1994. A total of 14 studies from 13 articles were reviewed.

Eight studies reported that 'a psychological treatment was superior to control therapy, five failed to find a significant effect and one did not report if psychological treatment was superior' (Talley *et al.*, 1996). Two of the studies used hypnosis aimed at relaxation and intestinal control as the psychological treatment: Whorwell *et al.* (1984) and Harvey *et al.* (1989). Both studies were considered by Talley *et al.* (1996) to use acceptable IBS outcome measures in the form of a daily diary, although neither study considered the clinical significance of their findings when reporting their results.

Whorwell *et al.* (1984), in a sample of 30 treatment-resistant patients, randomly assigned patients to either seven 30-min sessions of hypnotherapy and use of autohypnosis or seven 30-min sessions of supportive discussion and use of placebo pill. Treatment ran over 12 weeks with follow-up data obtained, on patients in the hypnosis condition only, at 18 months. Patients in the hypnotherapy condition had more severe bowel habit than patients in the control condition pre-treatment. Thus, some of the treatment effect for hypnosis may have been due to regression to the mean. The results indicated that hypnotherapy produced greater improvement in IBS symptoms than the control condition.

It is also notable that of the 14 studies reviewed by Talley *et al.* (1996) only that of Whorwell *et al.* (1984) exceeded the cut-off score

for their quality algorithm. However, they also noted that Whorwell *et al.* (1984) used 'nonconsecutive volunteers ... and largely excluded subjects over 50 years old, who were later reported to do less well with treatment' (Talley *et al.*, 1996, p. 284), thus limiting the generalizability of the findings.

Harvey *et al.* (1989) randomly assigned 33 subjects to either four 40-min sessions of individual hypnotherapy or four 40-min sessions of group hypnotherapy. The treatment continued over 7 weeks and follow-up data were obtained at 3 months. The results showed no significant difference between group and individual therapy, and there were no pre-post significance tests on the IBS symptoms.

A more recent study by Palssson *et al.* (2002) on hypnosis treatment for IBS is noteworthy for the quality of its design. Their study describes two studies designed to test four hypotheses in addition to the effectiveness of hypnosis for IBS. The hypotheses concerning the mechanism producing benefits in hypnotic treatment were that: '(1) hypnosis treatment reduces visceral pain sensitivity ... (2) hypnosis improves IBS symptoms by relaxing intestinal smooth muscle ... (3) hypnosis treatment reduces physiological arousal ... and (4) improvement in symptoms is mediated by reduction in the psychological trait somatization' (Palssson *et al.*, 2002, p. 2605–2606).

In their first study, Palssson *et al.* randomly assigned 18 patients (15 women and three men) to either a hypnotic treatment with pain-specific suggestions or a hypnotic treatment without pain-specific suggestions. Treatment in both conditions consisted of seven 45-min sessions of individual hypnosis treatment over 12 weeks, and the hypnotic intervention was delivered verbatim from a written script developed by the first author. Patients were tested before and 2 weeks after the seven-session treatment, and on both occasions they completed the Symptom-Checklist-90-Revised (SCL-90-R; Derogatis, 1994), the Beck Depression Inventory (Beck *et al.*, 1996a) and a barostat assessment of muscle tone and rectal pain thresholds. Patients also kept a daily diary of symptoms (abdominal pain, bloating, proportion of hard or watery stools and frequency of bowel movements) for 2 weeks prior to both test sessions.

The results indicated no significant differences in symptom change between the two groups although both groups showed significant change in all clinical symptoms (except number of bowel movements) between baseline and the end of treatment. For both groups there were no significant changes in rectal pain thresholds or smooth muscle tone between baseline and end of treatment. However, there were significant decreases in the SCL-90-R scales for somatization, anxiety and total number of psychological symptoms endorsed.

In the second study, Palsson *et al.* (2002) randomly assigned 24 patients (15 women and nine men) into two groups. Group IM received hypnosis treatment immediately after a 2-week symptom-recording baseline and a test session. Patients in this group were also re-tested 2 weeks and approximately 4 months after treatment. Patients in group DL, the wait-list control group, received no treatment for the first 4 months but were then treated with hypnosis and re-tested after completing the same treatment as group IM, so that all patients were tested at 0, 4 and 8 months (time 1, time 2 and time 3, respectively) after enrollment. This design controlled for regression to the mean and also for the non-specific effects of participating in a study. Patients in both groups were also interviewed 10 months after treatment. The same seven-session scripted treatment used in study 1 above was used in this study. Patients completed the SCL-90-R and the Physical Symptoms Inventory (Palsson *et al.*, 1998), in addition to having autonomic arousal assessed in each of the three test sessions.

Patients in group IM showed a significant reduction in the symptoms of IBS (pain, bloating, stool consistency and frequency of bowel movements) from time 1 to time 2, while group DL showed no such change from time 1 to time 2. The group differences were primarily due to changes in pain and the proportion of bowel movements rated hard or watery. Patients in group DL when treated with hypnosis showed a similar significant decrease in abdominal pain and abnormal stool consistency from time 2 to time 3. Pooled data from both groups indicated that all physical symptoms improved with hypnotic treatment: pain, bloating, stool consistency and frequency of bowel movements. Follow-up data for patients in group IM 4 months after

treatment (time 3) showed that pain and bloating remained significantly improved relative to baseline, but abnormal stool consistency scores were no longer significantly changed. At 10 months follow-up, all 21 patients who had improved with treatment continued to report improved symptoms.

The only physiological measure that showed significant change in study 2 was reduced stress reactivity in skin conductance following treatment. However, in terms of psychological measures, on the SCL-90-R there were significant reductions in the total number of psychological symptoms and in the anxiety, depression and somatization subscales. On the basis of the results from both studies, Palsson *et al.* (2002) concluded that the benefits of hypnosis were not dependent on pain-specific suggestions, relaxation of intestinal smooth muscle or changes in physiological arousal (other than a 'small reduction in sympathetic autonomic nervous system activity after treatment,' p. 2612). However, psychological measures were significantly reduced by hypnosis, and the authors suggested that hypnosis improves IBS symptoms 'primarily by altering the patient's focus of attention and/or by changing his/her beliefs about the meaning of sensations arising from the gastrointestinal tract' (p. 2612).

29.4.3.1. Summary of research on hypnosis for IBS

Two of the three studies cited in this section were well designed and showed a clear effect for the hypnotic treatment of IBS and, while the third study (Harvey *et al.*, 1989) showed no pre-post difference in symptoms, it lacked a no-treatment control group and its course of treatment involved 160 min of treatment as opposed to 210 min in the Whorwell *et al.* (1984) study and 315 min in the Palsson *et al.* (2002) study. This suggests that there may be a dose effect for hypnosis when used in the treatment of IBS. Furthermore, of the 14 studies reviewed by Talley *et al.* (1996), only the Whorwell *et al.* (1984) study exceeded the cut-off score for their quality algorithm, and Palsson *et al.* (2002) employed a rigorous research design to evaluate the effectiveness of hypnosis for IBS, a design that controlled for possible regression to the mean. If one is to lend greater

weight to the more rigorously designed studies, it would appear that there is strong initial evidence for viewing hypnosis as an effective treatment for IBS.

29.5. Adjunctive treatment

In approaching the end of this chapter, those readers outside the field of health psychology and medical practice may be left feeling short-changed, wondering where was the section on hypnotherapy for psychological disorders such as depression, anxiety or personality disorders. In contrast to the ongoing work on applications of hypnosis to pain and health-related problems, here one's wonder must give way to disappointment. Despite a rich literature of tantalizing case studies and numerous informative chapters written on the use of hypnosis for DSM disorders, the empirical literature is sparse.

Perhaps a reason for the dearth of empirical studies is that it is difficult to think of a stand-alone hypnotic treatment for axis I or axis II disorders without it occurring in the context of a more standard therapeutic approach such as psychoanalytic psychotherapy or CBT. In the future of research on applied hypnosis, it may be crucial that researchers determine what extra beneficial effect hypnotic *techniques* can add to other forms of psychological treatment.

Kirsch *et al.* (1995) in a special feature in the *Journal of Consulting and Clinical Psychology* discussed the results of a meta-analysis pertinent to the issue of hypnosis as an adjunct to cognitive-behavioral psychotherapy. In citing Rhue *et al.* (1993), they noted how hypnotherapy 'generally consists of the addition of hypnosis to some recognized form of psychotherapy' (p. 214), but they speculated that this additive effect would be relatively modest because: (1) 'most of the procedures conducted in hypnotherapy are the same as those conducted in non-hypnotic psychotherapy'; (2) 'clients vary in their responsiveness to hypnosis'; (3) 'clients vary in their attitudes and expectancies regarding hypnosis'; and (4) 'hypnotic inductions closely resemble conventional relaxation training', which is a frequent component of behavioral therapy (p. 215).

Their inclusion criterion was that the administration of cognitive-behavioral psychotherapy to a group in a hypnotic context could be compared

with the administration of the same therapy to at least one other group in a nonhypnotic context. The authors were able to find a sample of 18 studies for their meta-analysis, allowing a calculation of 90 effect sizes that involved 577 participants.

Across the 18 studies, Kirsch *et al.* (1995) found a mean effect size of 0.86, 'indicating that hypnosis enhanced the efficacy of cognitive-behavioral treatments.' Given the wide range of sample sizes in their selected studies and a significant correlation between sample size and effect size, they calculated the mean weighed effect size and obtained a result of 1.36. In considering the impact of the type of dependent measure used, they compared 12 studies using physiological variables, five studies using behavioral measures and nine studies using self-report measures.

They found no significant difference as a function of type of measure, although 'each was significantly greater than zero' (p. 216). They also tested for moderator variables, including whether the enhancement effect for hypnosis was due to (1) relaxation instructions rather than other aspects of hypnosis; (2) the addition of suggestions not included in the nonhypnotic treatment; and (3) the nature of the participant population (solicited students versus self-referring patients). They failed to find any significant differences in the effects as a result of these hypothesized moderators. Finally, when studies of obesity, which had the largest effect sizes, were eliminated from the calculation of the mean effect size, the authors obtained an effect size of 0.5, indicating that in their most conservative estimate, the average client receiving CBT with hypnosis was better off at the end of it than 70 percent of clients receiving the same therapy without hypnosis.

A recent study by Bryant *et al.* (2005) looked at the additive benefit of hypnosis and CBT in the treatment of acute stress disorder. Eighty-seven participants (53 women and 34 men) were randomly assigned to either CBT, CBT with hypnosis, or supportive counseling. The participants had been referred to a post-traumatic stress disorder (PTSD) unit after experiencing either nonsexual assault ($n = 48$) or a motor vehicle accident ($n = 39$). All therapists used a treatment manual. The CBT-hypnosis treatment was identical to the CBT treatment except

that participants in this group listened to a hypnotic induction before beginning imaginal exposure exercises. The induction included suggestions for focused attention, muscle relaxation and deepening suggestions. Hypnotic suggestibility was assessed using the Stanford Hypnotic Clinical Scale for Adults (Morgan and Hilgard, 1978–1979). Assessments using the Impact of Event Scale (IES; Horowitz, Wilner and Alvarez, 1979), the Beck Depression Inventory-2 (BDI-2; Beck *et al.*, 1996b) and the Beck Anxiety Inventory (BAI; Beck and Steer, 1990) were conducted at pre-treatment, post-treatment and at 6 months follow-up by independent clinicians blind to treatment groups. Sixty-nine participants completed the study and 69 also provided follow-up data.

The results of the study showed that immediately following treatment participants in both the CBT and CBT–hypnosis group showed greater benefit than participants in the supportive counseling group in terms of intrusiveness, avoidance, frequency and intensity of thoughts. CBT–hypnosis participants also showed greater reduction in intrusiveness than those in the CBT-only group. At follow-up, CBT–hypnosis participants fared better than supportive counseling participants for intrusiveness, intensity, frequency and avoidance of thoughts. However, the authors concluded that while both CBT and CBT–hypnosis ‘produced marked reductions in PTSD symptoms at follow-up relative to supportive counseling ... the CBT–hypnosis group did not enjoy greater clinical gains than those in the CBT group’ (p. 338). The authors suggested that the results may have occurred as a result of their research design whereby hypnosis was limited to imaginal exposure that typically reduces re-experiencing symptoms rather than a broader range of symptoms.

29.5.1. Summary of research on hypnosis as an adjunctive treatment in psychotherapy

As Kirsch *et al.* (1995) noted, it may be difficult to observe an effect for hypnosis as an adjunctive treatment when there is little difference between it and other components of treatment such as relaxation training, or as in the Bryant *et al.* (2005) study where the use of hypnosis is limited to very specific symptoms. Future

research will need to use hypnosis in a manner that is clearly additive, and not merely repetitive, and sample sizes will need to be sufficient to provide the statistical power to detect what may be significant but small effects. It will also be imperative that researchers ensure that therapists are sufficiently trained not only in the core treatment but also in the use of hypnosis as the adjunctive treatment. Without adequate training, it might prove tempting for therapists who are unfamiliar with hypnosis to approach it in an unsophisticated manner, wielding it without the weight of any clinical subtlety, and in so doing provide subpar treatment. Hopefully, Bryant’s recent study marks a continuing trend in this form of research, and the coming years will produce a variety of similar studies on the use of hypnosis as an adjunctive treatment. The empirical evaluation of what hypnosis adds to other forms of psychotherapy in the treatment of a wide variety of psychological problems may hold the key to a bright and promising future for the field of clinical hypnosis.

29.6. A note on hypnotizability

Several of the studies described in this chapter considered the impact of hypnotizability on treatment outcome. Other authors (e.g. Lynn *et al.*, 2000), in considering the empirical literature, have made the sensible case that studies showing a relationship between hypnotizability and outcome could provide indirect evidence for the effectiveness of hypnosis. Such a relationship certainly speaks to issues of mechanism, indicating that the effects of a hypnotic intervention are less likely to be due to non-hypnotic elements in the treatments, such as relaxation.

For example, Miller and Cohen (2001) considered the relationship between hypnotizability and immune response. Sufficient data were only available for the ITH and DTH responses. For ITH, the authors founds that highly hypnotizable subjects were able to suppress both erythema ($r = 0.419$, $P < 0.01$) and induration ($r = 0.321$, $P < 0.05$), but that they were unable to enhance either response. Low hypnotizables were unable to modulate either erythema or induration ($r = 0.02$, NS; $r = 0.01$,

NS, respectively). The authors found no significant relationship between hypnotizability and DTH responses.

Equally interesting, however, is the possibility that hypnotizability may play a more general role in the response of patients to nonhypnotic interventions. From a psychoanalytic perspective, while suggestion is typically considered less effective a technique than clarification or interpretation, hypnotizability as an attribute of the patient may reflect openness to regressive experience. From the viewpoint of more directive treatments such as CBT, hypnotizability may reflect openness to education, confrontation, redirection and/or a capacity for imaginal exercises.

For example, Andreychuk and Shriver (1975), in a study of headaches, found that highly hypnotizable patients showed greater treatment effects across all three of their treatment conditions (hypnosis and two forms of biofeedback). Friedman and Taub (1984), in their study of migraines, found that highly hypnotizable patients showed meaningful improvements at the 1-year follow-up relative to low hypnotizables, across all treatment conditions. Ter Kuile *et al.* (1994) found that relative to low hypnotizables, patients in both the hypnosis and autogenic training conditions and scoring high on the Stanford Hypnotic Clinical Scale for Adults experienced greater treatment effects both post-treatment and at follow-up.

However, there is clearly a need for further study on this issue. In the Lioffi and Hatira (1999) study on children aged 5–15 years undergoing bone marrow aspiration, hypnotizability was strongly correlated with improved outcome for those children in the hypnosis treatment group: $r = 0.69, 0.63$ and 0.60 for pain, anxiety and observed distress, respectively. However, these correlations were less clear in the CBT group ($r = 0.54, 0.13$ and 0.36) and in the control group ($r = 0.30, 0.00$ and 0.06), which may indicate that an individual's capacity to be hypnotized is not in and of itself an adequate guard against the discomfort and suffering inherent in medical procedures. It may be necessary to provide conditions in which that capacity is fostered and allowed to take effect, essentially providing a specific hypnotic treatment that invites a patient to effectively alter their experience.

Ascertaining what those specific treatments are remains an aim of future RCTs.

When hypnotizability is assessed is also an important issue. Pinnell and Covino (2000) noted that when hypnotizability was assessed after a treatment in a seemingly unrelated context, there was no longer a significant relationship between hypnotizability and outcome. While their observation is by no means conclusive, it warrants further investigation. The most effective way to do so would be randomly to assign half of the participants in a given condition to hypnotizability assessment in a context clearly related to the study and the other half in an unrelated context. However, the logistics of doing so would probably make an already difficult RCT nearly impossible to conduct. A reasonable compromise, when such a design is not possible, would be to include a measure of expectancy with regard to how much of a beneficial factor participants think hypnosis will be in their improvement.

29.7. Conclusion

In this chapter we have chosen to focus on the application of hypnosis as a treatment for acute and chronic pain, a means to facilitate smoking cessation, a boost to immune functioning, a way to relieve the symptoms of IBS and, finally, as an additive factor in psychotherapy. The findings for the treatment of pain are the most compellingly consistent. Across three reviews of the empirical literature, including one meta-analysis, the majority of findings lent support to hypnosis being considered a probably efficacious treatment for acute pain.

In 13 of 24 studies, hypnosis was superior to no-treatment, standard care and attention control conditions. In three studies, hypnosis was found to be equivalent to control conditions. When compared with other viable alternative treatments in eight studies, hypnosis was never found to be an inferior treatment, and in four studies it was found to be superior. In treating chronic pain, hypnosis was also found to be more effective than no-treatment, standard care and attention control conditions, and while it was never found to be superior to viable alternative treatments it was also never found to be less effective than such treatments.

However, what prevented assigning the label of well-established treatment to the use of hypnosis for pain was the lack of manualization. A manual was used in only one study of hypnotic treatment of acute pain, and there was no manualization in any of the chronic pain studies. And while an 'equivalent clear description of treatment' would have sufficed, this was also typically lacking throughout the studies cited. Furthermore, the number of subjects in the various conditions in each study typically fell below the optimal 25–30 recommended by Chambless *et al.* (1998).

The empirical support for hypnosis as a treatment for smoking cessation was mixed. While an extensive review by Green and Lynn (2000) concluded that hypnosis was more effective than no-treatment or wait-list control conditions, and that it was a possibly efficacious treatment, only three of the 59 studies reviewed had a rigorous experimental design that included both random assignment to conditions and a sufficient sample size. Only one of these three studies (Rabkin *et al.*, 1984) used a biochemical marker to measure abstinence, which is considered an essential outcome variable if a study is to be considered in establishing a treatment as an empirically supported intervention.

The Rabkin study found a single session of hypnosis to be more effective (abstinence rate of 23 percent) compared with the wait-list control group abstinence rate of 0 percent, but equivalent to group behavior therapy and group health education. A study by Schubert (1983) found hypnosis to produce similar abstinence rates (41 percent) to systematic desensitization (38 percent), both of which produced significantly higher abstinence rates than the waiting list control group (7 percent). It is not surprising, however, that there was no statistical difference between the two active treatments, as the only difference between the two was that the relaxation portion of the systematic desensitization condition was replaced by a hypnotic induction. The third rigorous study (Valbo and Eide, 1996) found the abstinence rate for hypnotic treatment (8 percent) to be no greater than the abstinence rates for the control condition. With only two of three rigorously designed studies supporting hypnosis as more effective than a control condition and only one such

study using biochemical markers, at least one more study that utilizes a biochemical marker of abstinence is necessary before hypnosis can be deemed an efficacious treatment.

Miller and Cohen's meta-analysis of 18 studies involving HWIS interventions calculated eight aggregate effect sizes. The 18 chosen studies study were all true experiments involving random assignment to treatment and control conditions; and had a multiple subject design. Hypnosis was found to have three significant effects: it could increase total secretory IgA ($r = 0.147$, 95% CI = 0.01–0.28, $P < 0.05$), increase neutrophil adherence ($r = 0.503$, 95% CI = 0.27–0.68, $P < 0.001$) and decrease ITH erythema ($r = 0.231$, 95% CI = 0.04–0.41, $P < 0.05$). However, the authors considered their findings to be tentative and they failed to find evidence for the clinical utility of hypnosis such as the suppression or enhancement of ITH induration (swelling), or the alteration of DTH, in terms of either induration or erythema.

The low number of subjects in the studies cited by Gruzelier (2002) on the enhancement of allergic reactions (Fry *et al.*, 1964; Laidlaw *et al.*, 1994) further limits our ability to claim that hypnosis is an efficacious or even possibly efficacious treatment for enhancing the immune response. The Horton-Hausknecht (2000) study on rheumatoid arthritis, while obtaining impressive results for hypnosis, also falls just short of a sufficient number in the control groups and it utilizes a quasi-random design that allowed for some self-selection in assignment to treatment. It is at least heartening that research on the immune system utilizes more than self-report outcome measures and relies heavily on biological markers of change. However, the clinical significance of these markers remains unclear and also there appears to be a lack of consistency across studies with regard to what markers are the foci of treatment. While it may be exciting to ponder the potential applications of hypnosis within the field of psychoneuroimmunology, much remains to be done in this developing field in the way of well-designed outcome research.

The evidence for hypnosis as an efficacious treatment of IBS was encouraging. Two of three studies that investigated the use of hypnosis for IBS were well designed and showed a clear effect

for the hypnotic treatment of IBS (Whorwell *et al.*, 1984; Palsson *et al.*, 2002). The third study (Harvey *et al.*, 1989) showed no pre–post difference in symptoms, but it lacked a no-treatment control group as it only compared individual hypnosis with group hypnosis. Also the amount of treatment contact time between patient and therapist was shorter in the Harvey *et al.* (1989) study relative to the two other studies, suggesting that there may be a dose effect for hypnosis when used in the treatment of IBS. Palsson *et al.* (2002) employed a rigorous research design that controlled for possible regression to the mean, included a standardized script for the hypnotic treatment and also employed physiological measures such as muscle tone and rectal pain thresholds. It was interesting to note that clinical improvement in this study was evidenced only by change in psychological measures, such as reports of pain and stool quality. The only limitation to these studies was the small number of subjects in each study, ranging from 18 to 33, and thus falling short of the desired 25–30 participants per condition.

A meta-analysis by Kirsch *et al.* (1995) found a mean effect size of 0.86, for the degree to which hypnosis enhanced the efficacy of CBTs. Twelve studies used physiological variables, five studies used behavioral measures and nine studies used self-report measures, but the authors found no significant difference as a function of type of measure. They also failed to find any significant differences in the effects for certain moderator variables, including whether the enhancement effect for hypnosis was due to (1) relaxation instructions rather than other aspects of hypnosis; (2) the addition of suggestions not included in the nonhypnotic treatment; and (3) the nature of the participant population (solicited students versus self-referring patients).

Future research on hypnosis as an adjunct to psychotherapy will need to use hypnosis in a manner that is clearly enhancing the treatment, and not merely repetitive, and sample sizes will need to be sufficient to provide the statistical power to detect what may be significant but small effects. It will also be imperative that researchers ensure that therapists are sufficiently trained not only in the core treatment but also in the use of hypnosis as the adjunctive treatment.

Without adequate training, it might prove tempting for therapists who are unfamiliar with hypnosis to approach it in an unsophisticated manner, and in so doing provide subpar treatment.

A perusal of the discussion sections of most reviews of outcome studies on clinical hypnosis would indicate a generally coherent format and tone. The findings are typically summarized as favoring hypnosis as a beneficial treatment option, and an argument is not infrequently made that hypnosis could be considered a possibly efficacious treatment as per the criteria set by Chambless and Hollon (1998). Then the necessary caveats are duly noted, the most striking being a need for manualization of treatments if the categorization of ‘probably efficacious’ or, eventually, ‘well-established’ is to be accurately conferred upon hypnosis as a clinical application. Clarity regarding the use of an induction and the nature of the suggestions used are a minimal requirement if replication and dissemination are to be possible. The importance of random assignment to conditions and sample sizes of at least 25–30 in each condition is also emphasized, in addition to the need for a sufficient description of the sample demographics and for follow-up data.

The more sophisticated reviewer will also probably insist on the need for a measure of hypnotizability and stress its importance in relation to questions of mechanism. Objective outcome measures specific and sensitive to the problem or symptom under investigation will also be stressed. Examples described in this chapter include the use of biochemical markers for smoking cessation studies and a record of opioid use for pain studies. Multiple measures of outcome will also hopefully be encouraged, and an informed discussion of the need for broad measures of outcome, such as quality of life, and not merely single problem measures may ensue. Finally, the truly thoughtful reviewer may also consider the question of practice and dose effects and how, for example, home practice of self-hypnosis on a daily basis adds to observed outcome effects.

This conclusion thus adds little that is new to the literature and offers a simple repetition of what most informed readers already know. But where this conclusion will differ from others

is in its unwillingness to adopt a tone of self-congratulatory satisfaction. For the caveats matter, particularly the need for an adequate description of what constitutes hypnotic treatment and a sufficient sample size. And if hypnosis is ever to reach the status of a well-established treatment, researchers will need to be willing to replicate the findings of others rather than continually innovate idiosyncratic treatments.

As proof of this claim, consider the fact that the only clinical problem for which hypnosis is listed by Chambless *et al.* (1998) as meeting criteria for the status of an empirically supported therapy is that of obesity. The status of 'probably efficacious' is based on a well-designed study by Bolocofsky *et al.* (1985) that evaluated the use of hypnosis as an adjunctive treatment to behavioral treatment. If a revised list of empirically supported treatments were to emerge today, we would most probably only see Lang *et al.*'s (2000) study on surgical pain and perhaps Palsson *et al.*'s (2002) study of hypnosis for IBS cited as supporting the use of hypnosis as a 'probably efficacious' treatment for both problems. While these studies are certainly representative of top quality research in the field of clinical hypnosis, their small number is certainly no fair indicator of the amount of research done to date.

In concluding, however, I will hold to a tone of guarded hope that is perhaps more appropriate to a handbook of hypnosis research. While it is easy to criticize the limits of the research done to date, the tremendous effort and accomplishment inherent in the research summarized in this chapter must be acknowledged and used as foundations for future study. Subscribers to a scientific method of inquiry should never remain satisfied, and hopefully this chapter has impressed two points upon its readers: that much impressive work has been done in evaluating the empirical status of clinical hypnosis; and that more remains to be done.

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CHAPTER 30

Making a contribution to the clinical literature: time-series designs

Jeffrey J. Borckardt and Michael R. Nash

30.1. Introduction

Clinicians typically possess considerable interest about what interventions work and do not work; however, they often dismiss the notion that they can make viable contributions to the scientific literature. This state of affairs derives in part from an unfortunate assumption that the only true experiment is a between-groups experiment. There is in fact another form of true experiment that is particularly compatible with real-world clinical practice: the single-case time-series design. Systematic tracking of one or a few patients over time can yield data well suited to allow viable inferences about efficacy, effectiveness and, under some circumstances, even mechanism of change. This chapter describes how clinicians working with hypnosis can carry out such research.

Group research designs have dominated the psychotherapy outcome research literature for decades; however, the single-case time-series design, when properly applied, can allow for respectable inferences about efficacy, effectiveness and sometimes even mechanisms of clinical change (Kazdin, 1982; Barlow and Hensen, 1984). Single-case time-series designs and group designs share the same fundamental rationale: something is manipulated by the experimenter

[i.e. an independent variable (IV) such as onset of treatment or the introduction of a new clinical technique] and the effects of that manipulation are measured or observed [dependent variable (DV) such as a patients' anxiety level or depression]. In conventional group designs, comparisons are made between groups of subjects. In the simplest example, one group of patients receives a treatment and another group receives nothing, or some form of control intervention. For these types of group designs, inferences about effectiveness are made based on a comparison of benefit between those who received the treatment intervention and those who did not. Thus, the conceptual question for the group designs is: on average are the patients in the treatment condition significantly 'better off' than those in the control condition? If the possibility that the observed difference between the two groups could occur by chance alone is small (e.g. <5 percent), then researchers can conclude that the IV was associated with a significant change in the DV.

In a single-case time-series design, effectiveness of an intervention is inferred 'by comparing different conditions presented to the same subject over time' (Kazdin, 1992, p. 158). Here the critical comparison is the functioning of the patient during the treatment phase compared with his/her functioning before the treatment

phase (usually an extended pre-treatment baseline). Thus, the key conceptual question for single-case time-series designs is: is the patient significantly ‘better off’ in the treatment condition than in the control condition? If the probability that the observed improvement could occur by chance alone is relatively low (around 5 percent) then the inference can be made that the IV was associated with significant change for the patient.

Chambless and Hollon (1998) and Chambless and Ollendick (2001) outline the methodological criteria for demonstrating clinical efficacy, and they make room for controlled single-case time-series designs in addition to the usual group designs. In fact, a treatment may be designated as ‘efficacious’ based solely on single-case time-series studies if effectiveness of the therapy is shown in at least two independent research settings (sample size of three or more at each site). For the designation of ‘possibly efficacious’, one time-series study with three subjects or more is sufficient in the absence of conflicting evidence.

Of the hundreds of published case reports in the professional hypnosis literature, only a handful offer anything other than the therapist’s own opinion regarding symptom improvement (Nugent, 1985). Of these, only a few attempt anything approaching a time-series design. Table 30.1 outlines some thoughtful single-case time-series studies in the hypnosis literature. None of them fully satisfies the guidelines put forth by Chambless and Ollendick (2001). This is in contrast to a rich and mature between-groups research literature which documents the utility of hypnosis across a number of settings and disorders including smoking cessation (Ahijevych *et al.*, 2000; Green and Lynn, 2000; Barber, 2001; Kinnunen, 2001), pain management (Montgomery *et al.*, 2000; Spinhoven and ter Kuile, 2000; King *et al.*, 2001; Rosen *et al.*, 2001; Wright and Drummond, 2001), pediatric medicine (Milling and Costantino, 2000), behavioral medicine (Pinnell, 2000), cognitive-behavioral therapies (Schoenberger, 2000) and others (Lynn *et al.*, 2000; Nash, 2000, 2001). What is missing from this literature is the knowledge we gain from well-conducted, intensive time-series studies of the individual patient as treated in the real-world of clinical practice.

The aim of this chapter is to show how robust time-series studies can be carried out by full-time clinicians as well as academic clinical researchers. First, some available time-series designs are described and reviewed. Next, issues related to dependent measures and data collection in time-series studies are discussed. Finally, some available time-series data analytic techniques are reviewed and a new data analytic technique is described.

30.2. Single-subject research designs

Although there are numerous single-subject research designs available, I will only cover a handful of the most common designs. Each single-subject design has advantages and disadvantages, and each is suited to answer specific clinical research questions. However, all of the designs discussed here have in common the fundamental element of repeated observations or participant-observations over time. These observations are collected in the context of ‘phases’ of treatment, and the beginnings and endings of phases can be determined naturalistically or they can be manipulated by the clinician-researcher. The types of inferences that can be made from the single-subject research design depend greatly on the methods of phase demarcation. Different designs allow the researcher different degrees of freedom with respect to phase demarcation (discussed below for each of the designs covered) which, in turn, impacts the types of inferences that can be made.

One major problem inherent in most research designs (single-subject or otherwise) is that of rival explanations. In other words, if significant effects are observed in the context of a research study, there may be a host of explanations for the effects other than the explanation of interest (e.g. the IV that we introduced caused the changes that we see in the DV). The different designs vary with respect to available rival explanations for observed effects. Some rival explanations fall under the following headings: history (unmeasured environmental events that result in changes in subject symptoms or functioning), maturation (changes that occur within a subject naturally as a part of normal human

Table 30.1 Some noteworthy clinical hypnosis studies with time-series rationale

| Author(s) | Problem | <i>n</i> | Design |
|--------------------------------------|--------------------------------------|----------|----------------------------------|
| Bornstein <i>et al.</i> (1980) | Nail-biting | 3 | A–B and follow-up |
| Bushnell (1984) | Eating disorder | 1 | Simultaneous treatments |
| Thompson <i>et al.</i> (1986) | Broca's aphasia | 3 | Multiple baseline |
| Heyman (1987) | Boxing | 1 | A–B–A–B performance |
| Nugent (1993) | Anxiety disorders | 3 | Alternating treatments |
| Boyd (1994) | Eating disorder | 5 | A–B |
| Dane (1996) | Pain | 1 | A–B |
| Moss and Oakley (1997) | Stuttering | 1 | A–B |
| Tloczynski <i>et al.</i> (1997) | Habit control | 7 | A–B |
| Galovski and Blanchard (1998) | Irritable bowel | 12 | Multiple baseline with crossover |
| Rucklidge and Saunders (1999) | Idiopathic itch | 1 | A–B and follow-up |
| Pates and Maynard (2000) | Golf performance | 3 | A–B |
| Treggiari-Venzi <i>et al.</i> (2000) | Weaning from a mechanical ventilator | 1 | A–B |
| DuHamel <i>et al.</i> (2000) | Post-traumatic stress disorder | 1 | A–B and follow-up |
| Pates <i>et al.</i> (2001) | Golf putting performance | 05 | Multiple baseline |
| Pates <i>et al.</i> (2001) | Basketball performance | 3 | A–B–A |
| Singh and Banerjee (2002) | Panic attack | 1 | A–B |
| Pates <i>et al.</i> (2002) | Basketball performance | 5 | Multiple baseline |
| Borckardt (2002) | Essential hypertension | 1 | Multiple baseline |
| Langenfeld <i>et al.</i> (2002) | HIV/AIDS pain | 5 | A–B |
| Lindsay <i>et al.</i> (2005) | Cycling performance | 3 | Multiple baseline |

development independent of clinical interventions and environmental events), instrumentation (changes in subject symptoms or functioning that occur because of the introduction of a system of measurement), statistical regression (tendency for extreme scores on any measure to regress toward the mean of a distribution when the measurement is taken repeatedly over time), internal validity problems (changes in patient symptoms or functioning that are caused by unintended clinician behaviors or nonspecific treatment effects; or failure of the clinician to deliver the intended interventions accurately) and error variability (changes in patient symptoms or functioning that are best described as expected or 'common' fluctuations over time).

The simplest design is probably the 'treatment-only' design (see Figure 30.1). This involves systematically tracking some dependent measure of interest over time during one phase of the treatment. The clinician-researcher can then analyze data for patterns or trends. However, since there is only one phase in this design, inferences are seriously limited. All that can be concluded is that 'during a course of a specific type of treatment, the subject exhibited a change in the dependent measure that followed a specific pattern'. Since there is no measure of pre-treatment functioning, no conclusions can be drawn about the effects of the intervention in question on patient functioning, and numerous rival explanations for the pattern of changes in the dependent measure cannot be ruled out.

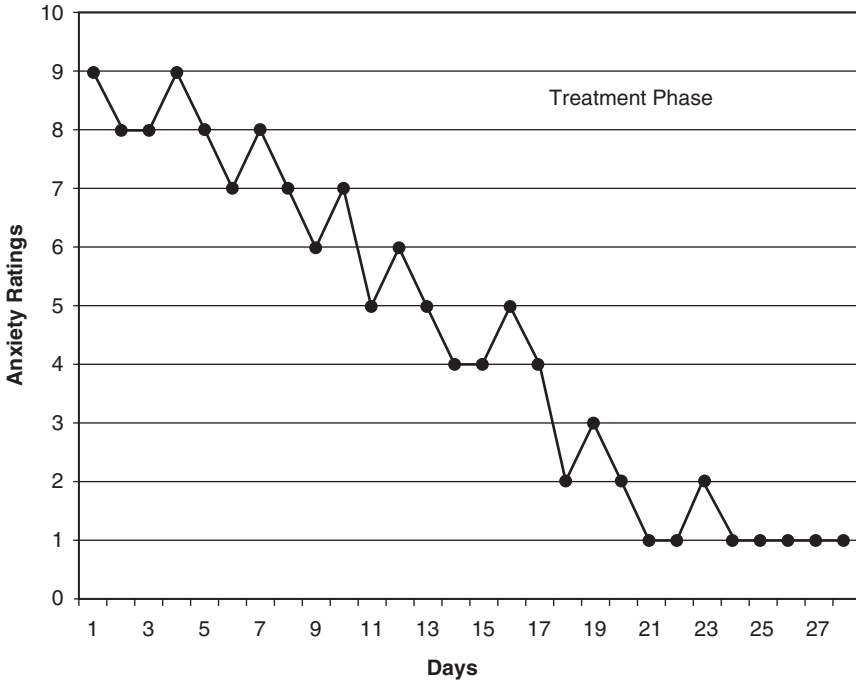


Fig. 30.1 The treatment phase-only design.

Table 30.2 lists an example inference that can be made using this design, as well as some rival explanations that can weaken the inferences.

The most basic single-subject design that allows for some tentative conclusions about effectiveness of treatment and/or conclusions about patient improvement is the A–B design (see Figure 30.2). In this design, a DV of interest (e.g. symptoms, problem behaviors, well-being, sleep, etc.) is tracked regularly for a period of time before treatment is started (baseline phase or phase-A). Then, a treatment is introduced and the DV continues to be tracked for a period of time (treatment phase or phase-B). This design allows for inferences to be made regarding symptom patterns over time, as well as whether the patient experienced a change in symptoms (or other DV) as a function of the introduction of the treatment. Table 30.2 shows that there are fewer rival explanations for observed effects for the A–B design than for the treatment-only design. If the DV changes when the intervention is introduced, a researcher can infer that DV change is associated with the onset

of the intervention. However, this is not the same thing as concluding that the intervention caused the change. Since there are a handful of competing explanations for the effects (see Table 30.2), it is impossible to know if a causal relationship exists between the intervention and the DV in question.

A more powerful design is the A–B–A design or the ‘removal’ design (see Figure 30.3). With this approach, the researcher tracks a DV during a baseline phase (phase-A), introduces some intervention (phase-B) and then removes the intervention (phase-A). Just like with the A–B design, if the DV changes in response to introduction of the treatment, we may conclude the treatment is correlated with symptom change. However, if we were then able to remove the influence of the treatment, we can begin to make some tentative inferences about the causal relationship between some element of the treatment and DV change. This is especially true if we are able to determine randomly when the treatment will be introduced and when it will be removed. The argument for causality gets

Table 30.2 Common single-subject research designs, available inferences and potential rival explanations for observed effects

| Design | Example inferences | Rival explanations |
|-------------------|---|---|
| Treatment-only | The DV followed a particular pattern | History Maturation Instrumentation Statistical regression External influences Internal validity problems |
| | Error variability | |
| A-B | The DV followed a particular pattern The DV changed pre- to post-treatment The subject improved/worsened Treatment is associated with change | History Maturation Instrumentation Statistical regression External influences Internal validity problems |
| Reversal (A-B-A) | The DV followed a particular pattern The DV changed pre- to post-treatment The subject improved/worsened Treatment is associated with change Some element of treatment may cause change | Internal validity problems |
| Multiple baseline | The DV(s) followed a particular pattern The DV(s) changed pre- to post-treatment The subject improved/worsened Treatment is associated with change This specific element of treatment is associated with change Some element of this treatment may cause change This treatment works only for certain DV(s) | Internal validity problems |

stronger (although never quite definitive) the more times we are able to apply and remove the influence of the treatment. The main problem with the A-B-A design is that it is rarely applicable in clinical practice. In fact, it might be considered unethical to ‘undo’ some clinical intervention that appears to be associated with improvement. However, if some element of a clinical intervention appears to be associated with worsening of a clinical DV, one might remove the influence of that intervention to see if the DV returns to baseline.

Probably one of the most powerful and flexible designs available to clinician-researchers is the multiple baseline design (see Figure 30.4). With this design, researchers are able to track several different symptoms or other relevant DVs

simultaneously, and systematically evaluate the effectiveness of different clinical interventions on each of them. For example, a patient with comorbid depression and nicotine dependence might be asked to track subject depression ratings as well as the number of cigarettes smoked per day during a short baseline phase. The clinician then may apply cognitive-behavioral interventions for depression while continuing to track both depressed mood and cigarette usage. After a change is noted in depressed mood (and perhaps no change is noted in cigarette usage), the clinician may try hypnosis for smoking cessation while continuing to track both DVs. Inferences can then be made about the correlation between different interventions and target DVs, such as ‘CBT for depression was associated

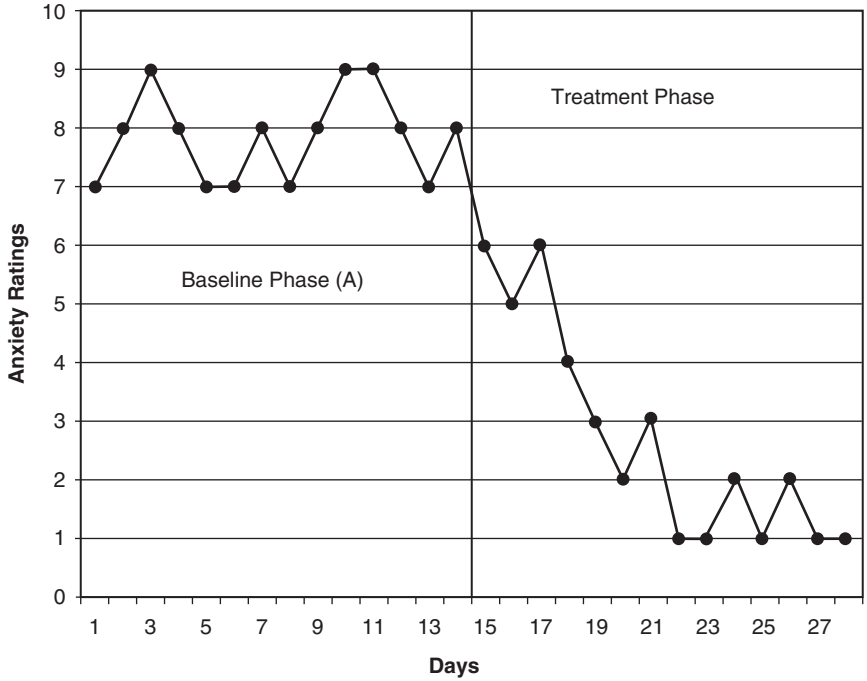


Fig. 30.2 The A-B design.

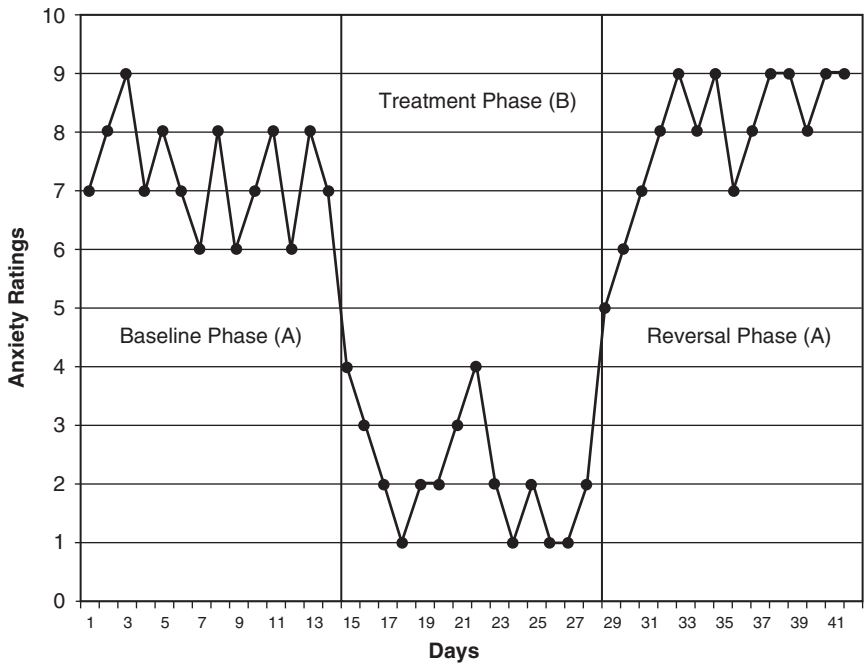


Fig. 30.3 The A-B-A design.

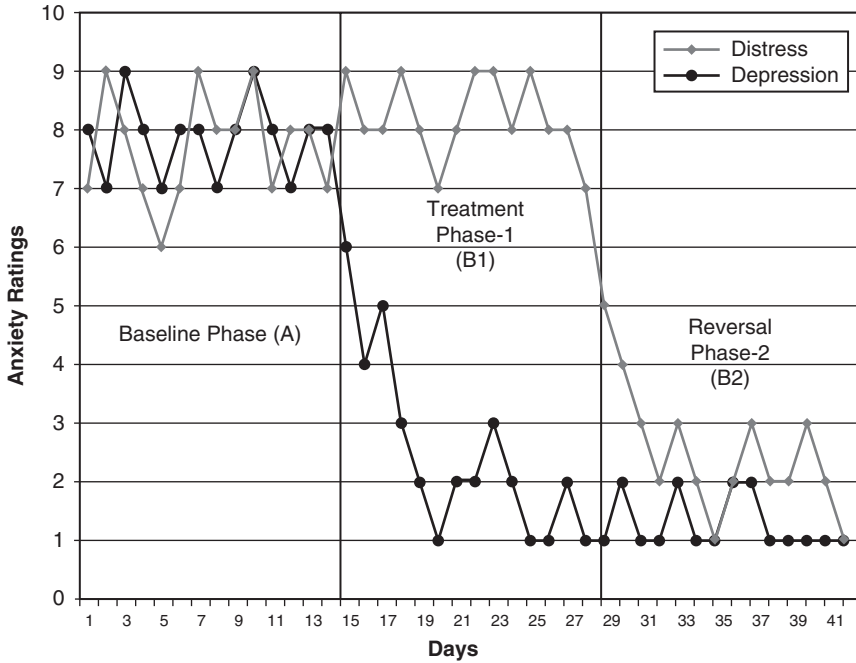


Fig. 30.4 The multiple baseline design.

with a significant decrease in depressive symptoms but no change in smoking behavior. Hypnosis was then associated with smoking cessation and no changes were noted with respect to depressed mood. These findings might be important in the context of several studies showing that smoking cessation is associated with increased risk for depression.

The multiple baseline design can also be used with a handful of patients for whom a clinician plans on using a reasonably standard intervention. For example, a few patients can begin tracking mood over time and interventions can be started at slightly different times with the different patients (ideally randomly determined starting times). If changes in the DVs are associated with introduction of the intervention in several patients that received the intervention at different times relative to the start of their baseline phases, tentative conclusions about causality of the intervention can be made. Additionally, if one or a few patients don't demonstrate change in the DV in response to introduction of the

treatment while several others do, hypotheses can be generated for later testing about patient factors that may limit the effectiveness of an intervention (e.g. co-morbid substance abuse, lack of social support, gender).

Lastly, the multiple baseline design can be applied to one or more patients for whom a clinician plans to try several distinct treatment elements over time. If the intervention order can be randomized as well as the timing, some tentative inferences can be made about the effectiveness of various treatment components on DVs of interest.

30.3. Dependent measures, sampling and data collection issues

Tracking change over time with one or a few patients defines the most fundamental feature of all single-case time-series outcome designs. Measurement of some outcome-related variable

(or a number of outcome-related variables) is repeated many times with the same patient. The outcome measure(s) chosen by the investigator is determined by the nature of the clinical problem. Beyond that, the investigator must make decisions about the *source* of the observations and the *content area* of observations. Further, the clinical researcher must make critical decisions about the data stream itself

30.3.1. The source and content of the observations

The source of the observations may be the patient himself, an informant or an objective index/test. In a case involving treatment for pain, the patient might report level of pain on a daily basis, or report PRN medication intake; an informant (e.g. a spouse) might report observed pain behaviors, or an employer might monitor work performance; or an objective test or index might gauge medication blood levels, range of movement or even blood pressure.

The content area of observations refers to the type of measure used and what is being indexed. Here the possibilities are nearly unlimited: patient behavior, experience, physiology, quality of life, work performance, medication intake, income and health care costs. Conceivably, the content area of observations can be indexed across the sources: self, other or objective test.

If change in the outcome index is to be properly gauged it must be monitored at equal intervals across time. Whether the clinical focus is heart rate, blood pressure, hair-pulling, itching, PRN medication intake or mood, repeated observations over time establish the topography of change during the course of the study, before, during and after treatment. It establishes the data stream. Figure 30.2 (A–B design) illustrates a stream of data (observations day 1 through day 28), which tracks a patient's daily 'anxiety ratings' during the course of a time-series study with a hypothetical patient. In this hypothetical example, the patient was asked to provide his/her overall anxiety rating for each day at bedtime using a scale from 0 to 10 (where 0 = no anxiety at all and 10 = worst anxiety imaginable).

Creation of the data stream is essential because the experimenter is interested in knowing how this stream of data (e.g. the ups and downs of the

target symptom) maps against the onset of the clinical intervention. Note that the data stream in our example is divided into two phases: a baseline phase (period during which there was no treatment, 1–14) and a treatment phase (period during which there was treatment, 15–28).

Regardless of phase, the interval between measurements must be the same throughout the entire study. In our hypothetical case, patient monitoring of anxiety is continuous and collected at regular intervals (i.e. daily), i.e. each data point in the data stream represents the average anxiety rating for each day. It can be problematic to have some observations of anxiety ratings for a 1-day period, and some during a 1-week period. The interval must always be the same. We refer to this as temporal resolution. The temporal resolution can be seconds, hours, days weeks, or months, but, once decided upon, the unit should be the same throughout the study. Violating this basic premise compromises the researcher's ability to capture fairly the extent of the problem, its variability and its periodicity. Alternatively, the researcher might administer the Beck Anxiety Inventory at regular intervals. While it may be difficult to get daily Beck Anxiety Scale scores, the researcher might be able to get a patient to complete the scale every 3 days. All that is required is that those intervals be the same throughout the study. Another way to put this is that the occasions for measurement are spaced the same from phase to phase.

Of course the duration of the study and the frequency of measurement determine the number of data points in the data stream. The duration of the study, especially in regards to the baseline phase, must enable the researcher to gain a fair sample of the clinical problem. Sampling anxiety ratings for only three or four consecutive days may not capture the nature of the problem, even if the temporal resolution is hourly, yielding many data points. Three or four days is simply not enough time. Longer phases not only give us a better understanding of the clinical problem, but with a higher temporal resolution (e.g. very frequent measures) enough data points can be captured to enable good statistical analysis.

The data stream is divided into phases according to the specific type of time-series design used. For example, we can divide our hypothetical data stream into only two phases: the baseline

phase and the treatment phase (see Figure 30.2). First, the investigator is interested in determining what this stream of data ‘looks like’ before treatment even starts—in other words, during the baseline phase. We are particularly interested in the baseline phase because it describes the extent of the clinical problem without intervention. Examination of baseline data enables the investigator to estimate: (1) the extent of the problem (the mean); (2) whether the problem seems to be getting better or worse without treatment (the trend); (3) the stability of the problem (how variable it is); and (4) the existence of subtle patterns in the data stream (autocorrelation) which are not easily apparent. I describe the first three notions immediately below, and devote a separate section to autocorrelation.

30.3.1.1. The extent of the problem and its trend

Does the patient have a minor or a severe problem? This is not only important because it helps a clinician-researcher appreciate the extent of the presenting problem, but it is also important statistically. After all, the challenge of treating someone who is anxious only when engaged in public speaking is very different from treating someone who reports high levels of general anxiety on a daily basis across numerous situations. Typically, the extent of a problem is represented by the mean of the observations during the baseline phase. In our hypothetical case the patient is considerably anxious during baseline. Over the baseline period, on average, the patient rates his/her anxiety as a 7.86 out of 10 each day. However, not only are we interested in the average extent of the problem, but we are also interested in whether there is any trend. Does the problem seem to be getting worse, or better without treatment? In our example there is no apparent trend towards improvement or worsening of symptoms during baseline (see Figure 30.2). If we were to project this trend into the treatment phase we get an idea of what the problem might be like in the future without treatment.

30.3.1.2. The stability of the problem

Examine Figure 30.2. Note the variability in the patient’s anxiety ratings during the baseline phase. One could attain a mean of 7.86 in

many ways. In an extreme case, most of the observations could be 8s with a few 7s and there would be very little variability. In some sense this would be an ideal case for analysis, because in general the less variability in the data, the easier it is to detect a real effect of treatment when it is there, just as with groups designs. In our example, the patient exhibits a little more variability than this, with baseline ratings ranging from 7 to 9. It appears that there may be multiple factors impacting the patient’s anxiety ratings which makes discerning an effect of treatment just a little more challenging.

These three parameters, intercept, trend and stability, are exceedingly important rhetorically and statistically. Rhetorically these parameters help the reader appreciate that the problem is quite severe, fairly stable and unchanging. Statistically these parameters play an important role in the investigator’s ability to determine how likely it is that the amount of improvement observed would occur by chance alone. The amount of improvement is deemed statistically ‘significant’ only if the likelihood that it would occur by chance is small.

30.3.2. Single-subject data analysis

So far I have discussed a number of properties of the data stream that bear on analysis—intercept, trend, variability, duration of the study and temporal resolution. I now encounter the notion of autocorrelation which is largely peculiar to time-series studies.

For researchers and clinicians who are familiar with group designs, the leap to single-case time-series designs can be confusing. The first thing to keep in mind is that the data points in your data stream are from the same person. They are not independent from one another. Hence from the outset, the assumption that governs most statistical analyses of between-groups designs—*independence of observations*—is violated. When using time-series designs, one can *not* simply assess the mean extent of the problem at baseline (with its attendant variability) and compare it with the mean during treatment (with its attendant variability) and test for significance. Nor can one easily switch to conventional non-parametric approaches (which also assume independence). For example, when flipping coins,

the binomial distribution test (a revered non-parametric) is the statistic of choice. But of course the statistic assumes that the outcome of any given observation (i.e. coin flip) is entirely independent of the outcome of previous observations (i.e. earlier coin flips). This is a safe assumption for coin flips—not so for most serial data in behavioral science.

With time-series data, one wishes to test whether the broad pattern of observations during baseline is different from the pattern of observations during treatment. This emphasis on *pattern* means that one must take into account the special property of time-series data streams which is often referred to as serial dependence, serial correlation or autocorrelation (Hartmann *et al.*, 1980; Franklin *et al.*, 1997). I will use the term autocorrelation.

Simply put, autocorrelation is the tendency for variability in a data stream to be predicted by previous observations in the same data stream. The weather is like this. What the mean temperature will be on Wednesday is reasonably predicted by what the mean temperature was on Tuesday, and probably to a lesser extent what it was on Monday, or Sunday. Another broader annual pattern (what the temperature was exactly 365 days prior to Wednesday) will also be predictive, as will be seasonal patterns. This too, is autocorrelation. In essence autocorrelation is the tendency of a data stream to ‘predict itself’. Another way to think of autocorrelation is to think of it as periodicity in the data stream. Autocorrelation (usually positive) is ubiquitous in behavioral data (Sharpley and Alavosius, 1988; Busk and Maracuilu, 1998; but see Huitema, 1988). Under many circumstances, if the clinical investigator ignores autocorrelation with time-series data he/she will make a type-I error, i.e. infer that there is an effect for treatment when in fact there is not. Put another way, the investigator underestimates the likelihood that the observed change could occur by chance only.

Unfortunately the presence of autocorrelation is largely undetectable by visual inspection of the data stream, and some data streams are more autocorrelated than others. One can measure the extent of autocorrelation by calculating autocorrelation coefficients. Calculating them is relatively straight-forward. The autocorrelation coefficient of interest of a data stream with

N data points (y_1 through y_N) can be calculated with the following formula:

$$r = \frac{1}{(N-1)} \frac{\sum_{i=1}^{N-1} (x_i - \bar{x})(x_{i+1} - \bar{x})}{\frac{1}{n} \sum_{i=1}^N (x_i - \bar{x})^2}$$

A data stream has many autocorrelation coefficients. The first would be the extent to which a given observation is predicted by the observation immediately before it. This is called a lag-1 autocorrelation (formula given above). One can also assess the level of lag-2, lag-3, lag-4 (etc.) autocorrelation in a data stream, but the autocorrelation coefficient of primary interest to behavioral time-series researchers is the lag-1 coefficient.

30.3.2.1 Visual analysis

Historically, those using time-series analysis, especially those interested in applied behavioral analysis, have relied upon visual inspection of the data stream. These investigators carefully examine the data stream looking for changes in intercept, and trend, while attempting to be mindful of variability in the series. The advantages of this approach are that it is relatively simple, it requires little or no computation and it can be done with data streams that have relatively few data points per phase. However, this method has two very serious shortcomings. First, expert judges using visual analysis methods have an alarmingly low inter-rater reliability coefficient: 0.58 in a meta-analysis of such studies (Ottenbacher, 1993) and 0.61 among 250 journal editors familiar with single-case studies (DeProspero and Cohen, 1979). Second, judges examining positively autocorrelated data streams using visual analysis are likely to infer an effect, when in fact there is none, in 16–84 percent of cases (Matyas and Greenwood, 1990). The greater the extent of autocorrelation, the higher the error rate. Hence, I agree with Robey *et al.* (1999) that ‘visual analyses of single- subject data do not produce outcomes satisfying the requirements of conservative science’ (p. 468). Still, for some types of complex time-series designs which have few data points per phase, where withdrawals and reversals are used and where improvement approaches

absolute cure, visual inspection might be an option. Under such circumstances, however, one might expect inspection to be augmented by some form of statistical analysis.

Other visual analysis methods involve the use of split-middle trend lines, celeration trend lines, OLS regression trend lines and variability estimates (including confidence or control limits, and sigma units) in order to integrate statistical principles with the visual procedures. For some approaches, decision rules have been developed based on Statistical Process Control Theory, and the decision to reject H_0 is made based on these more objective criteria. Unfortunately, there is substantial evidence that the reliability and accuracy of these visual procedures is lacking and type I error is significantly inflated when autocorrelation is present. In fact, for some published visual analysis procedures, type-I error rates are as high as 0.80 when high levels of autocorrelation are present in the data (Borckardt *et al.*, 2004).

30.3.2.2. Specialized time-series tests

Several time-series statistical procedures have been developed including modifications to traditional tests that address the specific problems encountered in short time-series data. Unfortunately, Tryon's C statistic, Ostrom's *t*-test correction and the PND statistic have either been shown to be susceptible to the same problems as visual analytic procedures and traditional statistical approaches in the face of autocorrelation and small sample sizes, or they haven't been carefully tested at all.

30.3.2.3. Removing autocorrelation

One approach that is sometimes employed in the single-case clinical literature is to remove autocorrelation from a data stream in order to force a data stream to meet the assumptions of a statistical test (namely the assumption of independence of observations). One way to do this is to use the residuals of a fitted autoregressive model instead of the raw data produced by the patient. The residuals can then be evaluated using any appropriate parametric or nonparametric test (assuming that fitting of the autoregressive model effectively removed the autocorrelation).

Another approach to removing autocorrelation from time-series data is called 'differencing'. Differencing involves subtracting consecutive data point pairs and using the differences for statistical analysis instead of the raw data. While differencing the data often removes autocorrelation, sometimes autocorrelation remains after differencing. The researcher can then difference again (and again) until the autocorrelation is removed. However, each difference that is calculated results in the loss of one degree of freedom (which can eventually negatively impact power to detect real effects). Additionally, differencing the data changes the fundamental nature of the measure in question. For example, first order differencing of 'number of hairs pulled per day' results in a new measure which is best described as 'change in number of hairs pulled per day'. If first-order differencing did not effectively eliminate autocorrelation and the data are consequently differenced again, the measure is changed again to 'change in the amount of change of the number of hairs pulled per day' or 'acceleration' in hair-pulling. This is not in and of itself a problem unless, as is often the case, the researcher then proceeds to analyze and report the results in terms of the original dependent variable 'number of hairs pulled per day'.

When studying changes in human behavior, health and/or physiology, we might expect there to be autocorrelation in the data. After all, there is something inherently natural about the gradualism of physiological repair and change (e.g. weight loss, tissue repair, cardiovascular fitness). Thus the elimination of the autocorrelational processes from our data in order to meet the assumptions of our familiar statistical tests may be misguided. Nonetheless, the following section describes several sophisticated approaches that are designed to remove autocorrelation in the process of modeling and analysing data.

30.3.2.4. Regression modeling approaches

Several very sophisticated and sound approaches to statistical inference with autocorrelated data streams are available. Some of them employ bootstrapping methodologies and sophisticated estimation procedures which essentially

partial-out autoregressive components from the data, forcing them to comply with the assumptions of traditional statistical tests. These approaches provide clinical researchers with several excellent inferential statistical options. However, these approaches are geared toward and work best with longer data streams than clinicians usually have available to them ($n > 30$ per phase).

In response to the incompatibility of these approaches with the short time-series data streams most commonly encountered in the clinical trenches, Crosbie (1993, 1994) introduced ITSACORR. ITSACORR is a regression procedure that attempts to remove the effects of three lags of autocorrelation from short data streams and then applies conventional statistical approaches (i.e. protected F -test and t -tests) to determine whether a significant change in level and/or slope has occurred between two phases (baseline and treatment).

Crosbie (1993) provides an empirical analysis of type-I error and power of ITSACORR across various sample sizes and levels of programmed autocorrelation. It appears to demonstrate good type-I error control, and Crosbie (1993, 1994) concludes that ITSACORR provides acceptable power to detect real effects (medium and large) with medium to high levels of autocorrelation present in the data. However, closer examination of the power estimates provided by Crosbie (1993, 1994) suggests that ITSACORR may lack sufficient power to detect effects smaller than a 10 standard deviation change. A change of this magnitude would hardly need statistical analysis to be detected. It is for the more subtle changes in patient symptoms or behaviors over time that statistical analyses can/should be used to augment human judgment. However, we would only want to use a statistical approach that indeed is sensitive and selective enough such that it helps us make sound judgments.

It appears that ITSACORR, while adequately controlling type-I error, probably lacks acceptable power to detect real effects when they exist in a data stream. While the approach is relatively user-friendly and appropriately stringent with respect to false-positive errors when autocorrelation is present, extremely large effect sizes need to be present in order for the test to detect them when autocorrelation is present.

30.4. A new statistical approach: simulation modeling approach to significance testing

For some time now, various bootstrapping methodologies have been employed to determine empirical significance levels. These approaches are used to re-sample from known distributions in order to determine exact probabilities instead of probability estimates. The following approach is a derivation of bootstrapping methodology.

For a stream of time-series data spanning two phases (baseline and treatment), the effect of the phase (independent) variable on the dependent variable can be represented by Pearson r . The correlation between the dependent variable (e.g. 14 data points) and a phase vector (zeros during the baseline phase and ones during the treatment phase) can be calculated using any standard statistical package (or by hand) quite easily. Assuming independent observations, the P -value associated with the calculated correlation coefficient (provided by the statistical software package or looked up in a standard P -value table) will appropriately indicate whether the researcher can conclude whether the treatment phase is associated with a significant change in the dependent measure.

One way to estimate the P -value for the same correlation (empirically) would be to generate thousands of data streams drawn from a known normal null distribution (i.e. completely random normal) and correlate each one with the phase vector. The original correlation coefficient can be compared with each of the correlations between the random-normal data and the phase vector, and the number of random-normal correlations that are larger than the original one can be counted. The proportion of this count to the total number of random correlations calculated represents the empirical P -value.

In the case of autocorrelated data, employing an empirical approach to significance testing that relies on random draws from a normal null distribution is inappropriate. This is because the presence of autocorrelation indicates that the distribution of the data deviates from normal in a unique way. However, random draws from an autocorrelated null distribution can fit

the unique needs of this type of data. In other words, if a distribution of autocorrelated random data can be constructed based on the observable properties of the actual data in question, empirical null-hypothesis testing procedures can be conducted to answer questions about the probability that observed changes in a dependent variable are greater than what would be expected given random variation and autocorrelation together.

This procedure involves a number of steps. First, an autocorrelation estimate is obtained from the data in question. Additionally, since this chapter is geared toward handling short streams of time-series data, Crosbie's (1993, 1994) correction for autocorrelation estimation bias is applied.

Using the observed parameters of the dependent variable (phase sample sizes and autocorrelation), thousands of random data streams ('simulation' streams) are generated. The magnitude of the correlation between the dependent variable and the phase vector is compared with the magnitude of the correlation between each of the random streams and the phase vector. The proportion of simulation stream correlations (absolute value) equal to or greater than the original data stream correlation to the total number of simulations generated is then calculated. The result is the empirical probability that the relationship between the dependent variable and the phase vector would be expected to occur by chance alone given the observed level of autocorrelation and phase lengths.

To illustrate the type-I error properties of the simulation modeling approach, 30 000 random time-series data sets were generated of various lengths and with various levels of programmed

autocorrelation. Sample sizes ranged from 12 (six phase A, and six phase B data points) to 30 (15 and 15), and programmed autocorrelation ranged from 0.00 to 0.80 in increments of 0.20. There were no programmed changes in intercept or slope between phases. Table 30.3 shows the empirical type-I error performance of the simulation modeling approach. The simulation modeling approach performs well across the various levels of autocorrelation and appears to be more stringent as the sample size decreases. It is not much more stringent than ITSACORR with small sample sizes and it appears to provide better type-I error control (0.05 ± 0.025) than ITSACORR as n increases.

The empirical power of the simulation modeling approach to detect a change in intercept between phases (effect size of 5; the level the Crosbie evaluated in 1993, 1994) is shown in Table 30.4.

The simulation modeling approach appears to demonstrate much better power than ITSACORR, with an effect size equal to the smallest one reported by Crosbie (1993). Next, a range of effect sizes was evaluated that included smaller effects (range = 2–7). Table 30.5 shows the empirical power of the simulation modeling approach to detect effects (2–7) when various levels of autocorrelation are present (0–0.8) and across various sample sizes (10–20 with an equal number of data points per phase).

30.4.1. Strengths of the simulation modeling approach

This approach provides clinical researchers with a selective yet powerful method for evaluating the statistical significance of

Table 30.3 Empirical type-I error rate (selectivity) of the simulation modeling approach to short time-series data analysis under various levels of autocorrelation and with different data stream lengths

| AR | $n = 10$ | $n = 12$ | $n = 14$ | $n = 18$ | $n = 22$ | $n = 26$ | $n = 30$ |
|-----|----------|----------|----------|----------|----------|----------|----------|
| 0.0 | 0.00 | 0.02 | 0.02 | 0.04 | 0.06 | 0.06 | 0.06 |
| 0.2 | 0.01 | 0.01 | 0.02 | 0.04 | 0.05 | 0.06 | 0.07 |
| 0.4 | 0.01 | 0.02 | 0.03 | 0.04 | 0.05 | 0.04 | 0.06 |
| 0.6 | 0.01 | 0.02 | 0.02 | 0.04 | 0.05 | 0.06 | 0.06 |
| 0.8 | 0.01 | 0.01 | 0.02 | 0.04 | 0.05 | 0.05 | 0.05 |

Table 30.4 Empirical power of the simulation modeling approach to time-series data analysis with a programmed level effect of 5 [the smallest effect-size investigated in Crosbie's (1993, 1994) ITSACORR analysis] across various levels of autocorrelations and with different data stream lengths

| AR | <i>n</i> = 10 | <i>n</i> = 12 | <i>n</i> = 14 | <i>n</i> = 16 | <i>n</i> = 18 | <i>n</i> = 20 |
|-----|---------------|---------------|---------------|---------------|---------------|---------------|
| 0.0 | 0.99 | 0.99 | 0.99 | 1.00 | 1.00 | 1.00 |
| 0.2 | 0.99 | 0.99 | 0.99 | 1.00 | 1.00 | 1.00 |
| 0.4 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| 0.6 | 0.97 | 0.97 | 0.97 | 0.98 | 0.99 | 0.99 |
| 0.8 | 0.95 | 0.95 | 0.93 | 0.94 | 0.92 | 0.92 |

between-phase changes with very short single-subject data streams. The simulation modeling approach provides substantially more power than ITSACORR but is still very selective, especially with very short data streams.

Additionally, this approach is very flexible. It can be applied to virtually any statistical procedure (e.g. *t*-test, ANOVA, regression, partial correlation). In fact, if a researcher observes slopes or trends in baseline or treatment and he/she wants to ensure that any observed effects have occurred independently of these trends, a partial correlation coefficient or regression model can be applied to the data *and* to the simulation data streams. Researchers can implement custom slope or trend vectors and evaluate phase effects over and above them. This allows the researcher to calculate the empirical probability that variability in a dependent measure is accounted for by both autocorrelation and slope or trend. To the extent that the relationship between a dependent variable and the phase vector is greater than would be expected by chance (given normal variability, trend and autocorrelation), one can confidently reject the null hypothesis.

30.4.2. Limitations of the simulation modeling approach

This approach is really designed for and has only been tested on very short streams of time-series data. When dealing with larger time-series data streams, more sophisticated approaches are available (e.g. autoregressive integrated moving average models, hierarchical linear modeling, autoregression, etc.).

The same limits that apply to any inferential statistic also apply to this approach. Rejection of

the null hypothesis (even if that null hypothesis has built in autocorrelation or trends) essentially means that there is a low probability that the null hypothesis adequately explains the observed effects. It does not prove any alternative hypotheses about why an effect occurred including hypotheses about the effectiveness of an intervention. In other words, finding statistically significant improvement from baseline to treatment phases does not necessarily mean that the treatment was effective. At best, one can only say that treatment was associated with improvement, but numerous other competing explanations may account for the observed effect. The only way to attribute improvement to an intervention involves careful development and implementation of a controlled, internally valid research design. This can be done with time series data but often involves special designs (not the typical A–B design).

30.5. Conclusion

Well-conceived time-series designs are true experiments because they systematically address threats to internal validity by controlling for improvement that might be due to mere maturation, symptom variability, periodicity, historical coincidence, multiple testing, and regression-to-the-mean. Though they can and should be a fundamental source of our knowledge about hypnosis, to date they have not fulfilled that promise. Put simply, these designs have been largely ignored. There are three groups of people who ought to do this sort of research but do not. First, the researchers focus almost exclusively on group designs, thereby neglecting study of the individual. Second, some

Table 30.5 Empirical power of the simulation modeling approach to time-series data analysis with various effect sizes, sample size and levels of autocorrelation

| Effect | AR | <i>n</i> = 10 | <i>n</i> = 12 | <i>n</i> = 14 | <i>n</i> = 16 | <i>n</i> = 18 | <i>n</i> = 20 |
|--------|-----|---------------|---------------|---------------|---------------|---------------|---------------|
| 2 | 0.0 | 0.49 | 0.60 | 0.73 | 0.83 | 0.87 | 0.94 |
| | 0.2 | 0.42 | 0.52 | 0.58 | 0.69 | 0.75 | 0.81 |
| | 0.4 | 0.42 | 0.46 | 0.47 | 0.52 | 0.60 | 0.63 |
| | 0.6 | 0.39 | 0.40 | 0.41 | 0.42 | 0.45 | 0.45 |
| | 0.8 | 0.41 | 0.40 | 0.36 | 0.36 | 0.32 | 0.32 |
| 3 | 0.0 | 0.79 | 0.89 | 0.94 | 0.98 | 0.98 | 0.99 |
| | 0.2 | 0.77 | 0.84 | 0.87 | 0.90 | 0.95 | 0.97 |
| | 0.4 | 0.70 | 0.77 | 0.91 | 0.81 | 0.85 | 0.90 |
| | 0.6 | 0.70 | 0.72 | 0.71 | 0.71 | 0.72 | 0.75 |
| | 0.8 | 0.69 | 0.67 | 0.66 | 0.58 | 0.61 | 0.59 |
| 4 | 0.0 | 0.95 | 0.98 | 0.99 | 0.99 | 1.00 | 1.00 |
| | 0.2 | 0.92 | 0.96 | 0.98 | 0.99 | 0.99 | 0.99 |
| | 0.4 | 0.91 | 0.93 | 0.96 | 0.97 | 0.98 | 0.98 |
| | 0.6 | 0.90 | 0.90 | 0.89 | 0.91 | 0.92 | 0.92 |
| | 0.8 | 0.89 | 0.86 | 0.83 | 0.81 | 0.81 | 0.81 |
| 5 | 0.0 | 0.99 | 0.99 | 0.99 | 1.00 | 1.00 | 1.00 |
| | 0.2 | 0.99 | 0.96 | 0.99 | 1.00 | 1.00 | 1.00 |
| | 0.4 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 | 0.99 |
| | 0.6 | 0.97 | 0.97 | 0.97 | 0.98 | 0.98 | 0.99 |
| | 0.8 | 0.95 | 0.95 | 0.93 | 0.94 | 0.92 | 0.92 |
| 6 | 0.0 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | 0.2 | 1.00 | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 |
| | 0.4 | 0.99 | 0.99 | 1.00 | 1.00 | 1.00 | 1.00 |
| | 0.6 | 0.99 | 0.99 | 0.99 | 1.00 | 1.00 | 1.00 |
| | 0.8 | 0.98 | 0.99 | 0.98 | 0.97 | 0.98 | 0.98 |
| 7 | 0.0 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | 0.2 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | 0.4 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | 0.6 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |
| | 0.8 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

clinicians feel the psychotherapy research literature is irrelevant to practice and they have turned away in large part from the natural science model. Third, other clinicians who retain an interest in research but are intimidated by what they believe are the immutable pillars of good science: large groups and

extremely complex statistics. This chapter is an appeal to all three groups, but especially the third. Good science can be done with single-case time-series designs, and it can make a difference—not just in terms of what we know, but in terms of how hypnosis is viewed by the health care industry.

This chapter describes the rationale of single-case time-series studies and how these studies might be crafted by those interested in hypnosis. As with group designs time-series studies should be conducted with: (1) a treatment manual or, at least, a thorough description of what was done clinically; (2) a patient(s) whose problems are diagnosed in a valid manner; (3) a reliable and valid outcome assessment measure(s); and (4) an appropriate data analysis. However, the investigator using a time-series design must also ensure that the study is so structured that it provides enough data points per phase to impart sufficient power to the statistic used. Autocorrelation must be assessed, and a statistic must be selected that handles it appropriately (i.e. demonstrates good type-I and type-II error properties). Further, it is prudent to assess hypnotizability not just because it is a relevant patient trait which might predict success, but because its use might eventually shed some light on the extent to which hypnosis per se is an active agent in the therapy. These conditions are not difficult to meet. If these types of studies begin to appear we believe the field will benefit from a richer and arguably more useable clinical hypnosis research literature – one which marries the robust discernment of science to the real-world problems encountered by clinicians.

In order to conduct a technically sound single-subject research study, a clinician-researcher needs to be familiar with the available designs, data collection considerations, unique properties of time-series data streams and data analytic techniques. While this chapter is not meant to be the definitive guide for conducting single-subject research, it should highlight many of the important elements. Additionally, I hoped to introduce a new data analytic technique that clinician-researchers might use with data collected in the clinical practice trenches. I have developed a free software package that runs on Windows and Macintosh platforms that will run the simulation-modeling test. Interested readers can download the free program from the 'Software' page at <http://www.ClinicalResearcher.org>.

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CHAPTER 31

Hypnosis in the courts

Michael Heap

31.1. Introduction

As in many areas of science, those professionals who specialize in hypnosis, either as an academic subject or as a clinical procedure, are occasionally required to provide lawyers or the prosecuting authorities with the benefit of their specialized knowledge and expertise. In this chapter, I review the circumstances in which experts in hypnosis are asked to provide this service and I examine how current knowledge and understanding of hypnosis, and human psychology in general, informs this work.

I am approaching this task as a clinical and a forensic psychologist working in the UK, who, since 1992, has regularly undertaken psychological assessments for legal purposes. Also, since 1977 I have used hypnosis in clinical practice, taught and written extensively on the subject, and supervised research projects in the field. Because of this dual specialization, I have been asked to provide expert assistance in a range of legal cases where hypnosis or a similar procedure has allegedly been involved. At the time of writing (2006) there have been 27 of these cases, all but one being in the UK.

As a consequence, the material in this chapter will have a British bias. However, the principal focus of this chapter is understanding the nature of hypnosis from a rational, scientific perspective and how this can inform the answers to questions that lawyers and the police ask about hypnosis. I am hopeful therefore that readers

who have never undertaken this kind of work, and who may have no intention of doing so, will find this chapter useful to their understanding of hypnosis. I am sure too that they will have their own opinions about the issues that are raised, and no doubt will not always agree with those expressed by the author.

31.2. Providing expert witness testimony

In this chapter I consider both criminal and civil cases. In both types of case the accused person is 'the defendant'; in civil cases the term 'claimant' has now replaced 'plaintiff', the equivalent term in the criminal courts being 'complainant'. However, in criminal cases, historically it is our sovereign who is the offended party; hence in the UK (and in certain former colonies) we refer to, for example, 'the case of *Regina v. Smith*'.

Throughout the UK, contested cases tend to be conducted along adversarial lines and the two sides may instruct their own expert witnesses who all too often provide opinions in favor of the instructing side. In recent years, rules and guidelines have been established to minimize this in civil cases [e.g. by encouraging experts for the two sides to confer and establish points of agreement and disagreement or having just one expert instructed by both sides (Lord Woolf, 1999)].

In most of the casework that I describe, the expert witness is asked to address certain

questions about hypnosis and to prepare a report, which he or she sends to the instructing party (Defence or Prosecution). If the case goes to trial, the expert witness may be required to give oral evidence in court as a witness for the instructing side and will therefore be examined and cross-examined in the witness box. In England and Wales, civil cases (those involving compensation claims) are usually heard in the County Court in front of a judge, who decides in favor of one side or the other and, if the claimant is successful, determines the level of compensation. Minor criminal cases are tried in front of a magistrate; other criminal cases are tried in the Crown Court in front of a judge and jury. In that case, it is the jury who decide the verdict. (There are other courts, but these are the main ones in practice.)

Finally, it is worth mentioning that in the criminal courts, judgments are made on the basis of 'beyond reasonable doubt', whereas in civil cases the criterion is 'on the balance of probability'. This can sometimes make a difference to how the expert expresses an opinion in his or her report.

31.3. Hypnosis and the interrogation of witnesses

The use of hypnosis to facilitate eyewitness recall goes back over 150 years (Gravitz, 1983). More recently its application for this purpose has been called into question. The reasons for this have been discussed elsewhere (e.g. American Medical Association, 1985; Wagstaff, 1999) and will not be discussed in detail here. Briefly they concern the risk that hypnotic procedures may lead to memory distortion and even confabulation, and may also inappropriately enhance the witness's confidence in the veracity of the 'memories' elicited, something that can unduly influence the perceived reliability of witnesses when they present their evidence in court.

Much of this controversy has been formally aired in the USA, where, in contrast to the 'open admissibility' rule that prevailed until 1980, some states adopted the rule of *per se* exclusion of testimony elicited from a witness during or following hypnosis. This resulted from the case

of *State v. Mack* in Minnesota. In 1981 'a third way' was adopted by the New Jersey Supreme Court, namely a 'totality of the circumstances' test. This ruling accepts 'hypnotically refreshed' testimony in court if certain guidelines have been adhered to or if the judge considers it appropriate on consideration of the full facts of the matter. Some courts have adopted this test, while others retain the *per se* exclusion rule (Schefflin and Frischholz, 1999).

In the UK, until around 1990, investigative hypnosis was used by a small number of professionals, notably the late Professor Lionel Haward (Haward, 1988). In the 1980s, because of concerns expressed in the USA, the Home Office (the government department responsible for policing and legal matters) introduced a set of draft guidelines for police forces (Home Office, 1987). Regarding procedures, the guidelines state that, if hypnosis is employed, it should be conducted by a psychiatrist or clinical psychologist, and the whole interview must be videotaped.

Subsequent to this, the Home Office issued another circular stating more definitively that the use of hypnosis should be discouraged in police investigations (Home Office, 1988), but the final decision was left to chiefs of police.

Unfortunate consequences of using investigative hypnosis have been documented in two cases in the UK, namely *Regina v. Coster and Others* (Wagstaff, 1988) and *Regina v. Browning* (Gibson, 1995; Wagstaff, 1996). In the former case, a witness had been interviewed by a self-taught lay hypnotist. In the latter case, a hypnotic session with a prosecution witness revealed no evidence to incriminate the defendant, but the videotape was not disclosed until the guilty verdict (murder) went to appeal.

In the UK, hypnosis now appears to have fallen into disuse as a tool for forensic investigation. In the USA it still has its advocates (Brown *et al.*, 1998). One possible application is in the case of a witness who has been traumatized by the crime; hypnotic procedures may enable the witness to recall the event without the distress that may otherwise impede his or her memory. Even so, there is enough concern around to provide ammunition for any opposing barrister to question the credibility of a witness if he or she has been hypnotized for whatever reason.

In Heap and Aravind (2001, p. 479) we came to the following conclusion:

Training and experience in hypnosis does not in itself make a person an expert in human memory or in the interrogation of eyewitnesses to crime. There are, however, people who do have knowledge and experience in these areas. These include qualified psychologists and, in the case of eyewitness interrogation, police officers trained in memory facilitation techniques (Fisher and Geiselman, 1992). It is they who should be called upon to aid police investigations when witnesses need assistance in recalling events.

Accordingly, in my professional work I have avoided this use of hypnosis. Very occasionally I have been asked about using hypnosis on a *defendant* who is claiming extensive amnesia for the alleged offence. My advice is that it is entirely inappropriate to use hypnosis in such cases, at least at any time before the verdict and judgment. Of course, one fortunate outcome could be that the defendant recalls the offence and is thus able to accept what he or she did, and the legal process is thus expedited. The risk, however, is that he or she may, unwittingly or deliberately, provide details that are mere fantasy, and the problem then is what the criminal investigation team does about this new information. In the UK, the expert need not be overtaxed with deciding whether to accede to the Defence's request: the Home Office guidelines clearly stipulate that hypnotic procedures should not be used on any suspect.

31.4. Hypnosis and recovered memories

From the early 1990s onwards, a disturbing consequence of ill-considered psychotherapeutic practice came to light. Thousands of adult clients in America, Europe and Australia came to believe that their fathers and mothers had sexually abused them as children. In cases that are cited as typical, prior to therapy the clients have no memories of their being sexually abused; such memories emerge during therapy. Occasionally parents have been arrested, tried and in some cases convicted solely on the

evidence of recovered memories of abuse (Ofshe and Watters, 1994; Conway, 1997; Taub, 1999). In many of these cases, hypnosis or some form of guided fantasy has been used to facilitate access to the 'repressed memories'.

As a result of this, courts in a number of countries have called upon experts to give their opinion on the soundness of evidence in the form of 'recovered memories'. (Another role is in civil cases in which therapists are sued by clients or their families when it is alleged that they have elicited false memories by inappropriate means.)

In the UK, Tully (2005), a clinical forensic psychologist who is very experienced in this area, has drawn up a list of characteristics of what he terms 'questionable recovered memories'. One of these is an extensive degree of detail provided for quite remote 'memories', sometime for events that allegedly occurred during the period of infantile amnesia (the first 2 years of life). Another is the 'mushrooming of material' during a 'recovery' period of days or months, the 'memories' becoming ever more detailed and the alleged abuse increasingly more serious and extensive.

In a case on which the police asked me for an opinion, a woman in her late twenties alleged that she had been sexually abused by her father between the ages of 2 and 7 years. The complainant had first reported to her doctor that she was experiencing intrusive memories, flashbacks and nightmares of abuse by her father, and she was referred to the mental health services. She then consulted a private hypnotherapist. At the first session she underwent 'age regression', dramatically reliving the painful memories. The damage was done: the expert witness for the Defence declared in her report that memories 'uncovered' by hypnotic regression are known to be unreliable.

In actual fact things were not so clear-cut. It was far from obvious what additional 'memories', if any, were elicited by hypnosis and whether hypnosis had modified the existing 'memories' and the complainant's confidence in them. Whatever the case, however, her 'memories' of the key events were 'questionable' by Tully's criteria (see above). There was no collateral evidence to support the allegations, and the police abandoned the case.

31.5 Crimes allegedly committed under the influence of hypnosis

From the early history of hypnosis there has been interest in whether a person, while hypnotized, can be induced to commit a crime that he or she would otherwise be unwilling to undertake, and several case examples are discussed by Gauld (1992), Gibson (1991) and Laurence and Perry (1988).

I have provided expert witness opinion in three criminal cases (drug-smuggling, theft, and murder with attempted murder) in which the Defence raised doubts concerning the question of *mens rea* (the intention to commit the crime or knowledge of wrongdoing) owing to the possible use of hypnosis on the accused. (There were no doubts concerning *actus rea*—the act of committing the crime—on the part of any of the accused: the evidence was overwhelming.) In two of the cases there was in fact no evidence that hypnosis had been used. (The defendants were both of African origin and believed that they had been subjected to some form of occult influence that had caused them to commit the crime. The lawyers in both cases considered that the nearest thing that they could present as a defence was to suggest that their clients might have been hypnotized.) The third case is somewhat different and was resolved when the defendant pleaded guilty shortly before trial.

Another defence may be that the accused's perception of the context of the crime was distorted by hypnosis, say by the suggestion that the victim of his or her assault was a potential murderer and defensive action was required (see the above for relevant historical cases). I shall later argue that distortion is a very unlikely explanation for the behavior of either a defendant or a complainant.

31.5.1. Hypnosis and will

In the public mind (and my experience leads me to include lawyers and the police) there is a common belief that hypnosis can induce automatism or absolute obedience to the will of the hypnotist. Hypnosis is often associated with occult practices that allegedly involve 'trance' states, and stage hypnosis is another reason why people may

associate hypnosis with automatism. Yet another source of confusion may be that we usually describe the subject's experience of hypnotic responding as having an automatic and involuntary quality (e.g. Heap *et al.*, 2001). However, this is not the same as extreme obedience or automatism.

From a modern theoretical perspective, it is difficult to make the case that hyperobedience is a property of hypnosis, even in highly hypnotizable people. The modern theory that may be most relevant to this issue is the dissociated control model due to Woody and Bowers (1994). This theory proposes that during hypnosis the influence of the supervisory attention system of the frontal lobes is suppressed and the subject's responding is governed by 'contention scheduling' in the same manner as other behavior that is habitually executed in an automatic fashion.

In fact, laboratory studies (e.g. Orne and Evans, 1965; Coe *et al.*, 1972; Levitt *et al.*, 1975; O'Brian and Rabuck, 1976) have compared hypnotic and control subjects in their willingness, amongst other things, to make slanderous statements, plunge their hands in a beaker containing acid and throw 'acid' at the experimenter, mutilate the bible, cut up the national flag, make homosexual advances, steal, and deal in heroin, and no convincing evidence has emerged to indicate that hypnotic subjects are more likely to obey such instructions than control subjects who are subjected to the same demands and pressures.

The experiments of Milgram (1974) may be particular apposite here. These demonstrated that members of the public could be persuaded, on the understanding that they were participating in a scientific experiment, ostensibly to deliver painful and even potentially lethal electric shocks to another person. To account for these observations, Milgram described two modes of responding that characterize the behavior of the individual in a social hierarchical system. In the self-directed or autonomous mode, the individual's behavior is dictated by his or her own needs and internal state. In the systemic mode, the exigencies of the individual's internal state are subservient to those of the hierarchy and this is reflected in his or her behavior. The requirement to move from autonomous to systemic mode (obedience), a

process that Milgram terms the 'agentic shift', is signaled by elements recognized by the individual as having due authority in the hierarchy, which in the case of Milgram's studies was the experimenter.

The opinion that I have consistently provided for the courts is that in the contexts in which hypnosis is undertaken (scientific experiment, treatment, stage show, etc.) the coercive powers of the hypnotist are not the result of any property of hypnosis *per se* but those of the context itself. In all these situations people can be persuaded to perform in extreme ways which normally they would refuse, and which they may regret later. The hypnotist (as experimenter, therapist, entertainer, etc.) is usually in a position of authority or dominance with respect to the hypnotic subject, and this itself endows him or her with significant power to invoke obedience in the subject. Moreover, the subject may trust the hypnotist to the extent that he or she interprets any apparently inappropriate demands as safe and legitimate.

It suffices to say that any claim that a crime has been committed through the direct influence of hypnosis is extremely difficult to support from our current knowledge of hypnosis.

31.6. Allegations of personal injury due to the negligence of practitioners of hypnosis

I shall not consider in any depth claims of negligence (as opposed to criminal behavior) against *therapists*. My experience of such cases informs me that it is not hypnosis *per se* that causes harm, it is bad therapy and thus the *misuse* of hypnosis, however well meaning the intentions of the practitioner. This was certainly true of case I described in Heap (1996). The defendant was a lay practitioner who had undertaken a correspondence course in 'hypnotherapy' and was thereby informed that all psychological problems are due to childhood trauma, notably sexual abuse. One procedure he used was to suggest to the claimant, during hypnosis, that she was experiencing a series of horrific events as a child including drowning, being consumed by fire and being surrounded by a hostile crowd. When she finally disengaged from therapy, a

clinical psychologist diagnosed her as suffering from post-traumatic stress disorder brought on by the treatment. She sued the practitioner but had to abandon her case when he was declared bankrupt and her legal aid (state funding) was therefore withdrawn.

Defendants in most of the civil cases of which I have had experience have been stage hypnotists. Before considering these it is useful to consider the legal aspects of stage hypnosis in the UK.

31.6.1. Stage hypnosis and the law

Stage hypnosis is permitted in some countries, restricted in others, and banned in a few [see Hawkins and Heap, (1998) for information on the position in Europe and Israel]. In the UK, the only law directly pertaining to hypnosis is the 1952 Hypnotism Act, and this is exclusively concerned with the licensing by local government of public demonstrations of stage hypnosis. In 1989 the Home Office circulated a document to all local government authorities outlining 'Model Conditions' on the way stage hypnosis should be conducted (Home Office, 1989). It was recommended that these be attached to any licenses that are granted. These model conditions were amended (Home Office, 1996) as a result of an enquiry by a panel of psychologists and psychiatrists. This was set up by the Home Office, and its report (Home Office, 1995) concluded that stage hypnosis did not present such a risk as to warrant its outright prohibition (although local governments have always been free to deny licenses for public shows, and some of them consistently do this).

31.6.2. Publications on stage hypnosis

There are few publications on stage hypnosis from an academic or research perspective. Meeker and Barber (1971) have presented an analysis based on a nonstate approach. Crawford *et al.* (1992) interviewed 22 participants in stage hypnosis (university students). They were generally positive about their experiences but some were frightened and embarrassed. Five (22.7 percent) had extensive

amnesia (they were highly susceptible) and one was very upset when it could not be breached (see also Echterling and Emmerling, 1987; Echterling, 1988). More recently, MacKillop *et al.* (2004) found that members of the audience and participants generally had favorable attitudes to stage hypnosis and it was well tolerated.

There have been a number of published accounts claiming that psychological distress, and sometimes physical injury, have been caused to a participant or even a member of the audience by the actions of a stage hypnotist (Erickson, 1962; Waxman, 1978, 1981, 1988, 1989; Kleinhauz *et al.*, 1979; Kleinhauz and Beran, 1981, 1984; Misra, 1985; MacHovec, 1986, 1988; Echterling and Emmerling, 1987; Crawford *et al.*, 1992).

MacHovec (1986) devotes a whole book to listing 86 supposed instances of people being adversely affected by hypnosis generally, 12 of which involved stage hypnosis. The major problem with this author's approach is that it is highly anecdotal and uncritical, and the evidence he offers to implicate hypnosis is often very circumstantial. The same criticisms can be leveled at other authors. For example, Waxman (1988) describes the case of a young woman, who in 1970 died in her bath after attending a stage hypnosis show 4 months previously. She had a heart condition and she had fainted while in the audience (she did not participate). One version of events is that she 'caught the hypnotist's eye and he caught hers' (*Shield Gazette*, 8 April 1970). Following this she was worried about how she had been affected and kept having dizzy spells, which she attributed to the hypnotist. The cause of death was actually a heart attack and the coroner did not implicate hypnosis in her death.

Another problem with many published cases is that the problems and conditions described are rarely encountered in psychiatric practice, and mainstream diagnoses are seldom provided. For example, Waxman (1988) describes a young man who was still searching for his 'belly button' (navel) after a stage hypnosis show and reported the theft to two policemen. Another example is provided by Kleinhauz and Beran (1981; see also Heap, 2001) who describe the case of a teenager who was admitted to hospital after participating in stage hypnosis. She had 'fallen into a deep

stupor' and could not be roused. The authors' diagnosis was that she was in a 'pathological post-hypnotic state'. In another case, described by Kleinhauz and Beran (1984), a male student exhibited symptoms of acute psychosis including bizarre behavior, withdrawal, apathy, passivity and 'megalomania'. He had been previously hypnotized by a friend. The authors state, 'It is possible to conclude that his symptomatology had been entirely a product of a continuing hypnotic state' (p. 287).

31.6.3. More recent cases in the UK

There have been a number of legal cases involving stage hypnosis in the UK since the late 1980s. One of the most prominent was that of a young lady who, in 1993, died the same night she had been a volunteer for a stage hypnosis show at a local pub. She had inhaled her gastric contents while asleep and there was some evidence that she may have had a fit, though she had no history of epilepsy. I provide a statement to the police and have written a paper on the case (Heap, 1995a). The coroner returned a verdict of death by natural causes and did not implicate stage hypnosis. The deceased's family appealed against this verdict but it was upheld at the Royal Courts of Justice in January 1998.

In 1994 a woman successfully sued Glasgow Pavilion Theatre after she broke her leg when she fell or jumped off the stage during a stage hypnosis show. She claimed that she asked permission to go to the toilet and the stage hypnotist told her to take the nearest exit (*Guardian*, 4 November 1994). The court was told that she was in a trance and had no concern for her personal safety and had literally followed the instruction.

In September 1997 the County Court at Chester heard the case of *Nickson v. Birchall* (Heap, 2000a). Mr Nickson claimed that after participating in Mr Birchall's stage hypnosis show he had overwhelming urges to have sexual intercourse with his furniture and domestic appliances. Although he appeared to recover (following an exorcism by his doctor at a local church), he later presented as ill again and was diagnosed with major depression and post-traumatic stress disorder, though a psychologist suggested the possibility of Ganser's syndrome.

In the months and years to follow he was diagnosed with paranoid psychosis and then schizoaffective disorder. I was instructed by the Defence, and two psychiatrists, one experienced in hypnosis, appeared for the claimant. The case collapsed on the fifth day after the claimant's legal aid was revoked.

In August 1998 the High Court heard the case of *Gates v. McKenna*. Mr Gates claimed negligence against Mr McKenna after he had appeared in his stage hypnosis show in March 1994. Mr Gates alleged that his schizophrenic illness had been caused by participating in this show. The case was decided in favor of the defendant. The judge, Mr Justice Toulson, stated, 'By taking part in the show the (*claimant*) consented to participating in what were no more than a series of silly sketches, harmless in themselves'. Wagstaff (2000) has written an account of this case (which is followed by a series of discussion papers). Gruzelier (2000) has also provided an account of his opinions and on what he considers to be the dangers of hypnosis generally, including stage hypnosis.

In 2001, the case of *Howarth v. Green*, in which I was instructed by the Defence, was heard in the High Court. The performance had taken place 7 years earlier when the claimant had been one of two volunteers. After the performance she felt unwell and suffered a range of 'flu-like symptoms' including headaches and dizziness. She felt ill for several days and then developed symptoms of anxiety and depression and her doctor prescribed anti-depressants. She claimed that her problems persisted, and in July 1995 she was assessed for medico-legal purposes by a psychiatrist. In his opinion she was suffering from a severe depressive episode triggered by a 'life event', namely stage hypnosis, during which she was placed in a 'deep trance' and made to do things that she would not normally do.

Later that year the claimant disclosed to her husband that during the performance she had been upset by childhood memories of being indecently assaulted. (She had revealed none of this to her doctor or a hypnotherapist whom she had been consulting.) These memories came to the fore while she was participating in a routine ('Star Wars'), which I shall describe shortly. She and her husband then contacted her solicitor (legal adviser) and he referred her

back to the psychiatrist. He opined that the particular routine had evoked memories of her being indecently assaulted by her uncle as a child and 'the pain and anguish came flooding back'. She alleged that since that time she had experienced flashback memories of her abuse.

The defendant, Mr Green, averred that, in accordance with the Home Office Model Conditions (1989), he never 'regressed' his participants to their own childhood. Rather he would ask them to imagine behaving like 10-year-old children and suggest that they were playing an interactive video game called 'Star Wars'. He recalled that his two volunteers responded in typical fashion, i.e. as they held their imaginary guns and pretended to shoot at characters on an imaginary screen, dodging the returning fire. There was no indication that the claimant was distressed while she was doing this and some witnesses reported that she performed the routine 'with great vigor'. Subsequent acts included playing the role of a ballerina and laughing uproariously at an imaginary film.

The Prosecution's case was that the defendant had age-regressed their client on stage and caused an abreaction during which she relived painful memories of sexual abuse. Although in my evidence to the court I disputed the likelihood of this, the judge accepted it and awarded the claimant compensation.

31.6.4. Some assumptions concerning stage hypnosis

In Heap (2000*b*) I list a number of assumptions that are commonly made about stage hypnosis, particularly when its alleged risks are being debated. The first is that *all* participants are high in hypnotic suggestibility; the second is that the stage hypnotist puts them all into 'a deep trance'; and the third is that if the hypnotist does not cancel suggestions properly the participants may carry on compulsively acting on them in their everyday life. A related assumption is that the hypnotist may not properly 'release the participants from their trances' after the performance. There is a fifth assumption, namely that the hypnotist has complete control of the participant's behavior.

All of these assumptions can be challenged by reference to the available evidence, and the

reader is referred to Heap (2000*b*) for a more detailed discussion. In that paper I make the following assertion,

(T)he salient determining factors in the behaviour and experiences of the participants at a stage hypnosis show are their own skills, attributes, and commitment to the task, the very definite expectations concerning how they should respond, the effect of audience pressure, the stage hypnotist's demands, and the effects of being amongst a group of participants (p. 119)

Indeed, some stage hypnotists are aware of this and dispense with the 'trance-inducing' rituals altogether—see for example Baker's (1990) account of the American entertainer George Kresge, *aka* 'The Amazing Kreskin', and Hoggart and Hutchinson's (1995) account of the British magician Martin S. Taylor, who explicitly informs his audiences that no hypnosis is involved at all. (In the UK this is sometimes done in order to circumvent the licensing requirements or local prohibitions.) That the entertainers are still able to conduct their acts in the usual way should come as no surprise to readers of the research literature on hypnosis which indicates that

... under equivalent contextual demands and expectations, and possessing the same cognitive skills, commitment and involvement, 'non-hypnotised' participants are indistinguishable from participants who have been ceremonially 'put into a trance' (Barber *et al.*, 1974; Kirsch, 1991) (Heap, 2000*b*, p. 119).

Whether or not they use formal hypnotic procedures, some defendants deny that what they are doing is really 'hypnosis'. They also insist that their volunteers are able to resist any suggestions that they find unacceptable and are free to leave the performance at any time. The expert will probably be asked to address these matters in his or her report or when he or she is examined and cross-examined in court.

For these purposes, I have found very useful the following definition of hypnosis provided by the report of a working party on hypnosis that was commissioned by the British Psychological Society (Heap *et al.*, 2001).

The term 'hypnosis' denotes an interaction between one person, the 'hypnotist', and another person or

people, the 'subject' or 'subjects'. In this interaction the hypnotist attempts to influence the subjects' perceptions, feelings, thinking and behaviour by asking them to concentrate on ideas and images that may evoke the intended effects. The verbal communications that the hypnotist uses to achieve these effects are termed 'suggestions'. Suggestions differ from everyday kinds of instructions in that they imply that a 'successful' response is experienced by the subject as having a quality of involuntariness or effortlessness (p. 3).

Some authorities may aver that an essential ingredient is that the context be explicitly defined as 'hypnosis' for the subjects. Whatever the case, I consider that by the above definition there is no mileage in the Defence's claim that 'stage hypnosis is not really hypnosis'. It is true that, as argued above, the major influences that bear upon the stage hypnosis subject are contextual rather than hypnotic, but the same can be said of other situations in which hypnosis is being applied.

Concerning the ability of the participant to resist any suggestions or to disengage from the performance entirely, the earlier discussion on 'hypnosis and will' should lead us to conclude that hypnosis itself does not interfere with these abilities. However, the matter should not simply be left at that: there are strong social psychological influences on participants to comply with the demands of the situation, and for these reasons it may well be that some have difficulty exercising control over what they do or do not do.

31.6.5. Guidelines for assessing claims against stage hypnotists

It is my opinion that the risks of stage hypnosis, particularly those pertaining to the participants' mental health, have at times been unfairly exaggerated, but any claim of psychological injury should be given reasoned consideration. For example some suggestions may direct a participant to enact or imagine events or situations that would, if they were real, be frightening or distressing for him or her. Moreover, a stage hypnotist cannot be aware of all those things that a participant finds upsetting; for example someone told that she is riding in the Derby may have a phobia of horses. Also some participants find the experience of stage hypnosis very

unusual and intense, and may feel that the stage hypnotist really did have control over their minds and could make them do anything he wanted them to do. This belief can be very disturbing for people for whom self-control is a major psychological issue.

I have elsewhere (Heap, 2000*b*) suggested some simple ground rules for the assessment of claims of harm due to stage hypnosis. These are based on the premise that hypnosis is not a pathological state and that there is therefore no basis for attributing any supposed adverse effects to some unique psychopathological features arising from a person's experience of hypnosis. Hence:

1. The exact nature of the claimant's disorder should be described and defined according to established diagnostic criteria in medicine and psychiatry.
2. It should be made clear in terms of current knowledge of psychology and psychiatry how the claimant's alleged symptoms have been caused by the stage hypnotist's actions.
3. The possible role of hypnosis should be described with reference to current learned and scientific knowledge concerning the nature of hypnosis. (p. 123)

31.7. Allegations of professional and criminal misconduct during hypnosis

The majority of criminal cases for which the present author has provided expert opinion (ranging from oral advice given to the police to lengthy reports provided to the court) have been those in which the complainant alleges that he or she has been sexually assaulted during a session of hypnosis, relaxation, guided fantasy, and so on.

31.7.1. Published accounts

Laurence and Perry (1988) provide an authoritative review of historical cases in which hypnotists have allegedly indecently assaulted their patients or subjects. They also summarize some more recent accounts (Conn, 1972; Kline, 1972; Perry, 1979). Published accounts have also

been critically reviewed by Gibson (1991). In Heap (2006) I review these and the most recent published papers (Venn, 1988; Hoëncamp, 1989; Gibson, 1992; Heap, 1995*b*). These papers report cases of sexual intimacy between clinicians and patients during hypnosis, except for Venn (1988), who summarizes the cases of two young male soldiers who alleged that an officer made homosexual advances to them after he had performed hypnosis on them.

With some exceptions (e.g. Hartland, 1974; Judd *et al.*, 1986) authors are more drawn to interpretations of the victims' submissiveness that rely on nonhypnotic aspects of the situation than on assumed properties unique to hypnosis. This is also the stance adopted by Hawkins (1993) in his analysis of therapist–client intimacy during hypnosis.

31.7.2. Assessing claims of professional misconduct during hypnosis: general points

Let us consider the most basic scenario. A male therapist is treating a client or patient (let us say female) with hypnosis. Following one session of hypnosis, during which no third party was present, she goes to the police and says that while she was hypnotized the therapist was sexually inappropriate with her against her wishes. She did not resist or say anything to him at the time this was happening, or afterwards. The therapist avers that nothing untoward occurred during the session.

In the absence of any forensic or third-party evidence, this case is largely a matter of one person's word against another's. However, there are two anomalies in the complainant's account that may lead the court to question its credibility. First, no physical threat was made to her, yet the she did not immediately halt the proceedings or at least take protective action. Second, when the session was concluded, the complainant did not say anything to the therapist about what he had done.

Before these points are addressed, it is appropriate to mention some variations on the basic case described above. First, the context does not have to be clinical or therapeutic: another setting may be a psychological laboratory or a training course. Second, the complaint may be

made some time after the alleged assault—even years. Third, the complainant may have returned for further appointments following a session in which an assault is claimed to have occurred. Finally, the alleged assault or assaults may be limited to stroking and fondling sexual parts over the clothing, or may extend to such activities as masturbation, oral sex and full intercourse. Some of these complicating factors suggest further anomalies in the complainant's account that require explanation, such as why she returned for more appointments and why she waited so long to disclose.

It is my experience that the role of the expert witness largely entails examining the claimant's allegations and providing advice to the court as to their credibility. The evidence to be examined is largely documentary (the complainant's and defendant's statements, transcripts of police interviews, medical records, other witness statements, and so on); I have never been instructed to interview either of the principle parties.

Of particular concern are the apparent anomalies, illustrated above, that are present in such cases. Specifically, the expert will be asked his or her opinion as to whether, if the complainant's account is authentic, hypnosis can account for these anomalies. (Conversely, if the complainant's allegations are untrue, then the anomaly is why she went to the trouble of making them.) Although, from a moral, ethical and professional point of view, any intimacy by the defendant is inexcusable, from a legal point of view the court will be concerned about whether the complainant was able to give consent.

31.7.3. Case illustration

The case is that of a *Regina v. Darwish* which was heard at Manchester Crown Court in 1999. The defendant was a gynecologist and obstetrician, who had over a dozen charges of indecent assault and one of rape brought against him by 13 of his female patients over the period from 1980 to 1991. Many of the complainants came forward years after the event to have their statements compiled by the police after an accusation against Darwish had featured in the local press.

Most of the charges were made by patients who complained that while they were lying on

the examination table, Darwish used hypnosis on them by massaging their bodies. He would stroke their forehead, arms, abdomen and legs, and repeat suggestions of relaxation, heaviness, and so on. Sometimes he would begin with an eye-fixation procedure. The complainants alleged that while he was stroking them, his hands would wander to their breasts and between their thighs in an inappropriate manner.

Most of the complainants said that Darwish told them he was using hypnosis, but he himself denied this and said that he only used the term 'relaxation'. He also denied using any massage techniques. In all cases he was seeing the patients in a private clinic and there was no chaperone present.

In some of the cases, an internal examination and sometimes a breast examination would either precede or follow the relaxation. Some of the women had problems such as vaginismus or infertility, and the explanation of his using relaxation was that this would help them with their problems. Otherwise the purpose of the relaxation seemed to be to facilitate the physical examination. Nearly all, or possibly all, of the women at some stage in his seeing them would have had an internal examination.

During Darwish's relaxation procedures most of the women remained tense, vigilant and very confused about what was happening, but somehow unable to protest or halt the proceedings. Most did not describe themselves as 'hypnotized' although one complainant, who reported that she initially responded well to the eye heaviness and relaxation suggestions but later felt very tense, did describe herself thus. Typically they could make little sense of what Darwish was doing and felt that there was something wrong but at the same time they rationalized that he was a doctor, at the top of his profession, and they presumed that 'he knew best'.

It did appear both from the statements of the women and Darwish himself that his use of hypnosis was far too precipitous, with little introduction and explanation of why he was suddenly telling them in a soft and soothing voice that they were feeling nice and warm, heavy and relaxed, and so on. The accounts of the following complainants should be noted: complainant C1 had a history of emotional problems and was referred to Darwish with

a range of gynecological symptoms, including inability to have sexual intercourse with her husband due to a painful post-operative scar. She alleged that in 1981 Darwish used his hypnotic or relaxation procedure with her, but that all the time she was rigid with fear. At some point he adjusted her body to the sitting position, with her shoulders resting against the wall, and he raped her to ejaculation. He then made her kneel on the floor and had oral sex with her again to ejaculation. In her statement she claims that the next thing she recalled was making a telephone call from a kiosk some hours later and then arriving at her parents' home. She did not tell anyone what had happened, as her father was gravely ill. In fact it was 8 years later that she told anyone, namely her third husband. She continued to consult Darwish many times after the alleged incident and to be examined by him. Shortly after the alleged rape and sexual assault she became pregnant. She alleged that until her baby was born she was terrified that it was Darwish's offspring. An up-to-date psychological report stated that since the alleged rape, she had suffered primary symptoms of post-traumatic stress disorder, including nightmares and flashbacks.

Complainant C2 had an emotionally deprived past and a cruel father who sexually abused her. She was unhappily married. She was referred for pre-menstrual tension and lack of libido. Darwish saw her at his psychosexual clinic and undertook hypnosis with her, allegedly with massage including fondling of her breasts. He also did sessions of 'talking therapy' with hypnosis. She became emotionally dependent on him and perceived him as a father figure. She alleged that in one session he sat her on his knee and nibbled her ear while she was hypnotized. She described herself as confused and unsure of what he was doing. She stated that she asked Darwish whether he ought to be doing this and he replied, 'Yes, it's part of the treatment'. She said that afterwards she was 'in a daze'. She told her husband and eventually her doctor.

Complainant C3 was being seen for IVF treatment, and Darwish felt that it was beneficial for her to learn to relax. Whilst he was allegedly massaging her she felt very alert and very anxious and she claimed that when he began stimulating her vaginal area, she had an orgasm.

She telephoned her doctor afterwards, told her husband and complained to the General Medical Council.

Complainants C2, C3 and C4 told their husbands what had happened immediately afterwards. Complainant C5 told her mother and husband the same evening. Complainant C6 told her partner afterwards, who advised her not to go back to Darwish. Complainant C7 told her mother but not her husband. Complainant C8 told a psychiatrist 3 years later about what had happened, then her best friend, her GP and then her husband. Complainant C9 alleged that she was assaulted by Darwish in 1984 and only told someone when publicity about his being charged broke around 1998. Several complainants attended one or more appointments following the alleged assault.

Dr. Darwish was found guilty on eight counts of indecent assault, though on the charge of rape he was pronounced not guilty. He received a sentence of 6 years' imprisonment.

31.7.4. Questions to be addressed

Let us now consider the main issues that the expert is likely to be asked to address, both by the Defence and by the Prosecution in cases such as the one just outlined.

31.7.4.1. Did the defendant use hypnosis and was the complainant hypnotized?

I have discussed these questions in detail elsewhere (Heap, 2006) and made some relevant comments earlier in this chapter. In most cases the procedures used by defendants tend to involve suggestions and imagery directed at achieving mental and physical relaxation; whether one labels this 'hypnosis', 'relaxation', 'guided imagery' or whatever is not something about which the court need be too concerned. Whether the complainant was 'hypnotized' or not can again prove a rather unproductive question. Most complainants describe themselves as having been tense and very alert to what was going on around them; in other words, they were very *unresponsive* to the defendant's suggestions. A small number describe themselves as being aware and even terrified, but feeling too '(heavy and) relaxed' to take any defensive action. This anomaly, which clearly may undermine the

credibility of the complainant's account, requires explanation. If the alleged assault did take place, it may be that such complainants account for their unusual passivity by attributing it to the hypnotist's suggestions of profound physical relaxation.

31.7.4.2. The possibility that the accused assaulted the claimant and, because she was hypnotized, she was unable to resist

The fact that the complainant avers that she did not resist the alleged assault, and indeed in some cases actively participated in sexual activity, may undermine the credibility of her testimony. Can hypnosis account for this anomaly if her testimony is accurate? Does hypnosis have the property to render people unable to protect themselves against the hypnotist's unwelcome advances, and unable to resist his suggestions to engage with him in sexual activity?

For present purposes it is useful to make a loose distinction between 'passivity' and 'obedience'. 'Passivity' here refers to the lack of any active measures on the complainant's part to take defensive action against the assailant's unwelcome attentions. For example, the complainants in the Darwish case felt peculiarly inhibited about protecting themselves in the normal way when he was fondling them, i.e. they did not push him away, complain or get up and walk out. 'Obedience' here refers to the complainant's carrying out explicit actions under the direction of the defendant. For instance, some complainants have averred that they felt compelled, under the instructions of the therapist, to take hold of his penis, to engage actively in some sexual act with him, and even to return for further appointments.

I have already stated that there is insufficient evidence to support the assertion that hypnosis itself enables one person to over-ride another person's will, and that any unusual passivity or obedience manifested by the subject can normally be explained by the demands and expectations of the context and the respective roles of the participants. Reference was earlier made to the experiments and ideas of Milgram (1974), but it is evident that the structure and dynamics of the social psychological context in his experiments are not identical to those present in the therapist-client or doctor-patient interaction.

In the former case there are three principle actors, namely the experimenter (the person in authority), the naïve and usually obedient subject and the 'victim', whereas in the clinic there are only two. Also, in the latter context, it is the obedient party's expectation that the dominant figure is ministering to her personal needs, i.e. unlike Milgram's naïve subject, she surrenders her autonomy ultimately for the sake of her own needs and not those of the system. Clearly, further analysis of the clinical context is required to obtain a fuller understanding of the processes involved.

In fact, there *are* additional aspects of the context in which hypnosis is conducted that may reasonably be considered to inhibit a person's ability to challenge or resist what would otherwise be unacceptable behavior by the hypnotist. The subject is seated or lying down, with her eyes closed. By agreement, the hypnotist tends to direct what she does and experiences, and she is expected to go along with this. She is usually unfamiliar with the procedures and may therefore have an unclear idea about what behavior on the hypnotist's part is legitimate or otherwise. This especially applies to the issue of physical contact: some hypnotists use massage or stroking, and occasionally hypnosis is used to facilitate a medical procedure that requires direct physical contact between the practitioner and the patient.

In these circumstances, most patients trust that the practitioner's behavior will at all times be consistent with his professional undertakings. Yet they are clearly vulnerable to any malevolent intent on his part. When practitioners have exploited this vulnerability, the complaints' accounts reveal the operation of several related processes. With the exception of the fourth of these listed below, they may be relevant to any clinical context, not just one in which hypnosis is being used, although my impression is that they may be potentiated by the hypnotic context, particularly where the patient or client is unfamiliar with hypnosis.

The first process can be termed 'assault by stealth' (or the 'foot in the door' effect). This is similar to victim grooming by sexual offenders. The therapist gradually interacts in a more intimate manner with the patient, his behavior being legitimized as 'part of the treatment'.

For example, some therapists have persuaded their patients to accept kisses, embraces and fondling on the grounds that, to get better, they need to 'let go of their sexual inhibitions'.

In fact, quite intimate verbal and behavioral interactions between therapist and patient are permitted and indeed expected when health professionals administer to the needs of their patients or clients. This is obviously so when a physical examination is being conducted or where massage is part of the therapy. Thus, the patient at the outset has agreed as legitimate and innocent of sexual implication certain conditions that in ordinary circumstances would be construed as inviting attention of a sexual nature. A hypnotic induction itself can have quite seductive undertones: the hypnotist usually administers suggestions of progressive relaxation in a gentle, soft tone of voice using expressions such as 'warm, heavy and relaxed'.

For example, in a case I describe in Heap (1996), the complainant, who wanted to give up smoking, invited the hypnotist into her house and went upstairs into a bedroom with him, leaving her husband downstairs. She lay on a bed with her eyes closed and the main light switched off, and she allowed the defendant to stroke parts of her body, believing that this was a legitimate hypnotic procedure. Having given permission to the hypnotist to proceed thus far, someone in this position may find it difficult to disengage when, as happened in this case, the hypnotist's attentions become more blatantly sexual.

A second factor that seems to come into play can be expressed as 'the need for the patient to maintain the perceived authenticity of the roles that she and the therapist are intended to occupy'. This may be explained as follows. The patient and the therapist are in a reciprocal relationship: each is expected to behave and interact with the other in certain ways prescribed by their role descriptions. The intended outcome of their interaction is to relieve the suffering of the patient or advance recovery in some way, say by an assessment or examination. Normally it is important for *both* of them that they do everything to ensure that each perceives the other as authentic in his or her role. In the case of the therapist, he should be perceived to be skilfully undertaking some legitimate form of therapy or

examination that will ultimately bring relief of the patient's suffering. In the case of the patient, she should be perceived as having a genuine problem and as acting in accordance with the requirements of the examination or treatment undertaken by the therapist. There is also a power imbalance in favor of the therapist: with his assumed superior knowledge and experience, he interprets what is wrong with the patient on her behalf, what is the solution to her problem, and so on, and the patient's role is more characteristically one of passive acceptance.

Now what happens when the therapist's behavior departs from that prescribed by his role in order, for example, to gratify his sexual desires? The patient may well strive to maintain the perceived authenticity of their interaction within their respective roles. For example, a patient, although aware of what the therapist is doing, may rationalize that 'It must be part of the treatment', or 'He's a doctor—he knows what he is doing', and so on, and will continue to remain passive. Some patients also account for their continuing passivity or obedience by reporting that they '(desperately) wanted the treatment to work', i.e. they felt compelled to maintain their perception of the interaction as authentic within the role prescriptions of patient and therapist. In some accounts it is apparent that the complainant was concerned she might be misinterpreting what was happening; thus again she would be reluctant to abandon the patient role for fear that she would be falsely accusing the therapist and incurring his anger and rejection.

This confusion may persist once the session is concluded. Often complainants describe feeling 'dazed' and 'shocked' immediately following the session, and they need time to assimilate and appraise what has happened. Where hypnosis has been used, they may attribute their confusion and daze to their having been 'hypnotized'. However, in my experience complainants have difficulty simply accounting for their passivity and obedience as due to their being 'under hypnosis', since often they say, 'I didn't feel hypnotized—I felt tense and aware of everything that was happening'.

A third factor is 'unpreparedness'. Even when complainants realize that the practitioner's behavior has crossed the threshold of legitimacy they are understandably ill prepared as to what

action to take. It is as though they lack the repertoire of responses to deal appropriately with the unexpected circumstances that have arisen. (What am I supposed to do now?)

A fourth factor that may contribute to the complainant's passivity in the hypnotic context is the effect of merely believing that during hypnosis one is indeed under the control of the hypnotist and unable to exercise one's own will. It may be that this expectation has some inhibitory influence upon a subject's ability to resist any unwelcome attention by the hypnotist. This possibility was considered by Perry in the case of *Regina v. Palmer* which was heard at the Supreme Court, New South Wales, in 1976 (Perry, 1979; Laurence and Perry, 1988). It is difficult to cite evidence in support of this in the clinical context, but in the laboratory Orne (1959) has demonstrated that a subject's prior beliefs and expectations about hypnosis influence that person's behavior and experience during hypnosis, and these can be manipulated by the experimenter.

My impression is that reference to the above four processes is more apposite in those cases in which the assault has been confined to touching, stroking and fondling, and the patient is physically *passive*; additional explanations are required when the patient or client alleges that she was persuaded to engage in more extensive sexual activity with the therapist (i.e. was *obedient*), particularly when she took a more active role and returned for further sessions. These additional factors tend to have more to do with the psychological vulnerability of the patient and the emotional relationship that develops between her and the therapist.

31.7.4.3. Delayed disclosure

One striking anomaly, evident for example in the Darwish case, is that whereas some women immediately disclose what allegedly occurred, others wait for years and may only do so when they hear that others are making similar allegations. Occasionally a lawyer will enquire as to whether a post-hypnotic suggestion by the accused can operate to inhibit disclosure.

In Heap (2000b) I have given consideration to the nature of post-hypnotic suggestion (and the notion of 'uncancelled' hypnotic suggestions) with regard to cases involving stage hypnosis. It is clear from the research literature that, although

post-hypnotic responding may be experienced by highly hypnotizable subject as having a compulsive quality, there are constraints on the circumstances in which responding will occur (Fisher, 1954; Orne *et al.*, 1968; St Jean, 1978; Spanos *et al.*, 1987; Barnier and McConkey, 1996, 1998, 2001). In my opinion the answer to the question posed above is that delayed disclosure is unlikely to be explained by hypnosis.

In fact failure to disclose or disclosure only years after the incidents took place is very common with adult survivors of abuse and with patients abused by their doctors or therapists (Schoener *et al.*, 1989; Jehu, 1994; Department of Health, 2005). Shame, the idea that somehow he or she was to blame (or partly so for 'allowing it to happen'), fear of not being believed, fear of not being understood (e.g. by partner and family), fear of publicity, and so on, are all potent factors in inhibiting disclosure. It seems that becoming aware that others have come forward with allegations concerning the same perpetrator helps many victims be more confident to 'go public'.

31.7.4.4. Repeat attendance

Another anomaly in some cases is that of repeat attendance (or at least one further attendance) following the alleged assault by the complainant. Common sense suggests that, once the complainant comes away from the session and the full realization of what has happened takes hold, she is hardly likely to return. Yet some do.

As before, occasionally a lawyer will ask whether a complainant was compelled to return by the defendant's use of hypnosis; the obvious mechanism is again post-hypnotic suggestion and again my opinion is that this is unlikely. Where the assault has been limited to unwelcome intimate fondling, then the processes that I have already discussed that foster passivity may be sufficient to account for a return for a further appointment. One likely factor is the personality and personal resources of the complainant: it is reasonable to speculate that an unassertive, compliant person with low self-confidence would be more likely to return than someone with the opposite characteristics.

However, as appears to apply in the case of the allegations of complainant C2 in the Darwish case above, repeat attendance may arise when

the complainant becomes emotionally dependent on the therapist. In such cases she is caught in a bind: she does not want the therapist's sexual attention but if she rejects it she may lose the relationship. Some complainants voice this very dilemma. For example, they may aver that they knew that the therapist was in the wrong but they say, 'He was the only man who understood me', 'He made me feel special' or 'I didn't want to lose him'. (It is worth noting here how, as in many other aspects of therapist-patient abuse, the dilemma voiced by these complainants is very similar to that of people in nonprofessional abusive relationships, whether these be physical, sexual and/or emotional.) Finally, the possibility has to be acknowledged that some patients may value the sexual encounter with their doctor or therapist.

From a moral, ethical and professional point of view, none of this excuses the behavior of the defendant: from a legal point of view, the court will be concerned about the question of consent. It is not within the scope of this chapter to pursue this as it leaves behind the role of hypnosis. But can hypnosis be relevant here?

There is an impression amongst psychotherapists that transference may be intensified in therapy in which hypnosis is used (see Orne's advice in Schoener *et al.*, 1989, p. 337). One reason for this may be that the therapist is in the role of directing the patient's physical and mental experiences in a manner that can seem quite intimate, and the purpose is often to promote pleasurable feelings. It follows that the kind of transference and emotional dependency issues referred to above may be accentuated when a therapist is using hypnosis. This is rather too speculative to apply as a general rule, but it may be that for any given case, details of the complainant's account may reveal that her experience of hypnosis played a role in the development of transference.

31.7.4.5. The possibility that the defendant distorted the complainant's perception of reality

Can a hypnotist distort a subject's perception of what is happening when he assaults her so that she does not realize what he is doing? For example, could he suggest to her that she will perceive him as her husband or partner? This possibility

was considered earlier in relation to criminal activity by the hypnotized subject (see also Perry 1979; Laurence and Perry 1988).

I have not encountered such an allegation in my professional work. In the case of *Regina v. Nelson* discussed by Gibson (1991), one complainant, a young girl, engaged in oral sex with the defendant when the latter suggested that she was on a beach licking an ice lolly (Gibson, personal communication). However, according to Gibson (1991), the complainant's actions were consistent with reality and not with the fantasized scenario.

Occasionally, as in the present discussion, the expert may consider invoking the concepts of the 'hidden observer' and 'trance logic'. Hilgard (1986) reported that some highly hypnotizable subjects who responded profoundly to suggestions of analgesia or deafness nevertheless showed awareness of the pain or auditory stimulus when 'the hidden observer' was addressed by the experimenter. Similarly, Orne (1962) reported that subjects who successfully respond to a suggestion of a negative hallucination still continue to behave as though the object in question were present (e.g. they tend to avoid colliding with a chair of which they express no conscious awareness). These demonstrations are often cited as showing that even 'deeply hypnotized' subjects retain an awareness of reality.

The notion of the 'hidden observer' and that of 'trance logic' have come in for considerable criticism since the original studies (Kirsch and Lynn, 1998; Green *et al.*, 2005). However, in my view the expert is entitled to refer to this research to make the point that even very responsive hypnotic subjects seem aware at some level of what is happening in reality and can act accordingly when required.

In my opinion, suggested perceptual distortion is a very strong assertion to make in cases of sexual assault, but is possible to a limited degree, perhaps where legitimate physical contact is permitted in the session.

31.7.4.6. The possibility that the assault is a false memory (a 'believed-in fantasy')

It is very common for the instructing lawyer to ask the expert to comment on the reliability of memories of events that occur during hypnosis,

and specifically to address the question of whether the claimant's allegations are 'false memories'. The concern here is whether people are inclined to give full rein to their fantasies during hypnosis and whether hypnosis is of a nature such that reality and fantasy may be confused.

For present purposes, one way that a believed-in fantasy might be considered to arise is for the patient to fantasize during hypnosis that the therapist is engaging in some amorous or sexual involvement with her, and afterwards (immediately or after a longer period of time) be convinced that some such contact actually took place. (Another, theoretical, possibility is that the entire 'memory' is constructed retrospectively, i.e. some time after the session of hypnosis.)

Some patients have such fantasies about their therapists. I recall three female patients disclosing that they incorporated me (their therapist) into their imagery during the 'special place' technique whereby the patient is asked to imagine being in a place where she feels relaxed and safe. More apposite would be a patient's imagining that intimate activity were actually taking place *in the here and now* (i.e. as part of the procedures). The fantasy may be gratifying for the patient, but at the same time she may feel disturbed and ashamed that she is having such fantasies. The fantasy may, however, be entirely unwelcome: for example, for some female patients, sitting with their eyes closed alone with a male person may evoke implicit or explicit memories or fantasies of assault.

But can such fantasies come to be accepted as reality by the patient? The small minority of individuals who are described as 'highly fantasy prone' are reported sometimes to confuse their fantasies and reality (Wilson and Barber, 1981; Lynn and Rhue, 1988; Barrett, 1991, 1996; Barber, 1999). They are also somewhat over-represented in the population of highly hypnotizable people (Lynn and Rhue, 1988; Lynn *et al.*, 2004) However, what evidence there is (Lynn *et al.*, 1989, 1991) suggests that following hypnosis, subjects show little tendency to believe that a suggested event (in this case the answering of a telephone call by the experimenter) actually happened. It is difficult to draw any conclusions about fantasies of intimate activity from such limited data.

This approach to the question is at odds with that taken by Hartland (1974) in his account of

the case of an obstetrician who used hypnosis to help an anxious patient relax while he conducted an internal examination. According to the defendant, nothing untoward occurred but later that evening, as he was leaving his house, he was accosted by the patient and her husband and accused of indecently assaulting her by massaging her vagina and forcing her to fondle his penis. He was later charged with the assault. The complainant maintained that she was not hypnotized at the time of the alleged assault but only 'acted out of fear'. In fact her description of the experience is similar to that of many complainants as noted earlier. In his paper, Hartland states that after the defendant gave his evidence, 'it became increasingly obvious that the Defence could only succeed if it could convince the court that the plaintiff, *despite her denials*, was actually in a state of hypnosis at the time of the alleged incidents' (p. 197; my italics). Accordingly, both he and another Defence expert averred that it was likely that the patient had been 'in a trance' at the time and therefore may have hallucinated or fantasized the alleged incidents. ('When the doctor's finger was swept around the pelvic outlet, this might have been misinterpreted by the patient as "massaging the vagina" and thus have triggered off the fantasies that followed', p. 197.)

I consider that it is possible for a patient during hypnosis or a related procedure (in which visual cues for reality testing are absent) to believe in the authenticity of a fantasy of intimate activity on the therapist's part, such as some limited fondling. However, where the complainant alleges that she was made to engage in more involved sexual activity, then this kind of claim is too strong to pursue with due conviction, at least without evidence from the claimant's history of a tendency to false or delusional memories. (I have worked with a male schizophrenic inpatient who expressed such a delusional memory after being interviewed by a visiting psychiatrist.)

There is, however, another source of concern about the accuracy of the complainants' memories, the seriousness of which is rarely acknowledged by the courts. This is the risk of distortions of memory due to the time that has elapsed since the alleged incidents, the effect of interrogations by the police and interviews with lawyers, hearing the accounts of other complainants,

and so on. The distorting influence of all of these on witnesses' recall has been highlighted in the psychological literature, notably by Professor Elizabeth Loftus and her colleagues (Loftus, 1996).

31.7.4.7. Hypnosis and awareness

Can a hypnotist render a subject unaware of what is happening during an assault? During hypnosis, subjects are encouraged to become absorbed in feelings, imagery and fantasy, to the exclusion of external reality and immediate concerns. Is it possible for some subjects to become so detached from reality that they are unaware of what the hypnotist is actually doing to them?

Hypnotic subjects do at times appear surprisingly oblivious to incidental events that happen around them, even when they show no post-hypnotic amnesia for relevant events of the hypnosis session that were happening simultaneously. This may be no different from everyday experiences when, say, someone is absorbed in a book, television program or daydream and is remarkably unresponsive to extraneous events such as our efforts to gain his or her attention. Is it likely, however, that a person, even a highly hypnotizable one, could be unaware that the hypnotist is making extensive physical contact with her? Indeed, clinicians such as dentists do report that very occasionally a patient expresses amazement on discovering post-hypnotically that a quite invasive procedure has been completed.

Once more I consider that unawareness would constitute a very unusual claim by the Prosecution in an assault charge and would be difficult to propose with due confidence. Importantly, unlike a medical or dental procedure, an assault is wholly out of context. In support of this, again I consider that the expert is justified in referring to the earlier mentioned work on the 'hidden observer' and 'trance logic' (whatever the theoretical explanations may be).

31.7.4.8. The possibility of suggested or spontaneous post-hypnotic amnesia for the alleged assault

In the cases in which I have been involved, a claim of amnesia, even partial amnesia, is the exception rather than the rule; this was also the observation of Hoëncamp (1989) in the series of cases he presented. Of course, if there were

complete amnesia then a case would not be brought unless there was evidence to justify doing so.

Could an assailant successfully suggest amnesia for an assault? In my opinion, this is very unlikely. [Sometimes, as in Heap (1995*b*), complainants report that the defendant attempted unsuccessfully to induce amnesia by direct suggestion.] Research has indicated that although responsive subjects do appear to have genuine difficulty recalling the material targeted for amnesia, they retain control of their memory processes (Coe, 1989). That is, it is not simply the case that the hypnotist has to 'lift the spell' before the memories become available again for conscious expression (see also earlier remarks about post-hypnotic suggestion).

What about *spontaneous* post-hypnotic amnesia? This could theoretically be the result of lack of awareness at the time the assault happened (see above), in which case one would argue that there has been no encoding of the memory. Hence no memories are recoverable. However, occasionally a subject's memory for events that occurred during hypnosis appears unexpectedly vague or absent post-hypnotically when there is clear evidence that the subject was aware of these events at the time and responding appropriately.

I have been involved in only a small number of cases, both criminal and civil, in which significant amnesia has been claimed. For example, one complainant alleged that she had been indecently assaulted by a 'healer' over a period of several hours one evening and again the next morning (she had stayed at his house). She averred that much of the time she had resisted his efforts. He appears to have justified his behavior (mainly touching, fondling and attempts to remove her clothing) by informing her that he was encouraging a cathartic reaction associated with previous abuse. It was not altogether clear whether the defendant used hypnosis. The complainant informed the police on the afternoon following the alleged offences, stating that the memories of what had happened came 'flooding back' in considerable detail while she was doing her housework. It seemed to me that if the complainant's account was accurate, then it was more likely to be a full appraisal of what happened that came to her that afternoon than the

core memories themselves. This case was eventually abandoned on a technicality.

Either absence of awareness or a blanket post-hypnotic amnesia (which did not lift) was alleged by an ex-patient of Dr Darwish, whose offences were summarized earlier. This complainant alleged that he raped her. I was not involved in this case, the complainant not being amongst those referred to earlier as she made her allegations too late for the defendant's first trial. By the time he was tried on this indictment he was serving his prison sentence. The complainant recalled that she saw Darwish for help as she had experienced a loss of libido following the birth of her child. She recalled that he hypnotized her and asked her to imagine enjoying sex with her husband.

How this complainant came to make her allegation is a long story, but what it amounts to is that she suspected that Darwish was the father of her 14-year-old daughter and, when his offences against his 13 former patients featured in the local media, she and her husband arranged a DNA test, which revealed that Darwish, who, incidentally, delivered the child during a caesarean operation, was indeed her daughter's father. The complainant averred that she had no memory of having been sexually assaulted by Darwish and he denied having intercourse with her. (It is ironic that he was an international authority on infertility.)

The unanimous verdict of the jury was that Darwish was not guilty: in accordance with UK law at the time, the jury was not informed that he was by then serving a prison sentence for his previous convictions.

In my experience (and that of colleagues) in cases where the expert is instructed to provide an opinion on a claim of amnesia by either party, the task is far from easy. (I am here referring to psychogenic amnesia, although where amnesia is claimed due to organic influences such as drugs and alcohol, the case is often still far from clear-cut.) In cases where there is evidence that the complainant (and even the defendant) has been traumatized, the expert needs to consider the available scientific evidence on the effect of trauma on memory and the status of mechanisms such as repression and dissociation, by no means an area in which consensus opinion prevails. This applies in cases where the

complainant has been subject to hypnosis. Here, one avenue that the expert may wish to pursue is the association of hypnosis and dissociation, the argument being that, as the assault occurred during hypnosis, the potential for dissociative amnesia may be potentiated. If so, the expert will want to look for evidence pertaining to the complainant's capacity for dissociation. If the evidence is restricted to documentation this will entail examination of medical and psychiatric records; otherwise the expert may augment his or her examination of the complainant with an instrument such as the Dissociative Experiences Scale (Bernstein and Putnam, 1986), bearing in mind that this is a self-report inventory whose purpose is transparent. Evidence that may also be adduced in support of a claim of post-hypnotic amnesia comes from the work of Barrett (1991, 1996; see also Barber, 1999) identifying a small percentage of highly hypnotizable subjects who are 'amnesia prone', though this concept has been disputed by some authorities (Lynne *et al.*, 2004; Wagstaff, 2004).

In fact the expert will find that in considering the nature and causes of alleged *spontaneous* post-hypnotic amnesia, there is little guidance from the experimental literature. One consideration is state-dependent memory, a phenomenon not confined to hypnosis. There is also evidence that post-hypnotic amnesia is related to the expectation of its occurrence (Cooper, 1972; Young and Cooper, 1972), but this does not seem a convincing explanation for extensive amnesia for an experience as significant as a sexual assault.

I have one final recommendation. Where significant memories appear after a period of post-hypnotic amnesia (in the form, say, of sudden recollections or flashbacks or the result of conscious deliberation), then the advice to the court should be that these may not be accurate. For one thing, the person will not have had the opportunity to rehearse and consolidate the memories during the 'amnesic' period and the memories may be contaminated by fantasy, belief, expectation, and so on. I dare say that such advice will have its detractors, but it must be emphasized that it is the expert's duty to advise the court on the *reliability* of such evidence, not primarily on whether he or she believes it to be true.

31.8. Conclusions

There is much public misunderstanding about the nature of hypnosis, and little awareness of the scientific progress that has taken place over the last half-century. Lawyers, judges, policemen, and so on are no more informed than the general population and are just as inclined to credit the hypnotist with powers normally associated with witchcraft. Hence, writing reports on hypnosis for the courts in both civil and criminal cases is a challenging but rewarding task.

Throughout this chapter, much of the discussion has not simply involved a consideration of the nature of hypnosis but has drawn upon evidence and knowledge from mainstream social, cognitive and clinical psychology. Some readers may feel that I have given insufficient attention to the possible role of altered states of consciousness, dissociation or even neurophysiological and neurocognitive models of hypnosis.

This may to some extent reflect my preference for 'socio-cognitive' rather than 'special process' (or 'state') interpretations of hypnotic phenomena. There is, however, another reason. The demands on the specialist in the legal arena are very different from those in clinical practice or academia. In particular the expert witness should be prepared to err on the side of parsimony in making assumptions or speculations of a theoretical nature. Evidence, knowledge and ideas that are grounded in mainstream social and cognitive psychology prove more adaptable to this purpose; interpretations that are based on special processes that are considered to underlie the hypnotic 'state' are much more speculative when offered retrospectively as explanations for the behavior and experiences of a given hypnotic subject such as the complainant in an assault case.

As the reader will have noticed, I have found role theory to be especially useful in making sense of allegations made by claimants and complainants. In fact, an understanding of roles and other social psychological processes is particularly helpful for similar cases in which hypnosis is not involved at all, such as those concerned with doctor-patient intimacy in general. Professionals involved in the legal process, like most people, give insufficient acknowledgement

to how much one's social behavior and experience is scripted and choreographed by the demands and expectations of the various roles—implicit and explicit, formal and informal—that one occupies in the course of one's everyday life.

In fact role theory is also very apposite in helping the expert witness make sense of his or her experience of the legal proceedings in any particular case. Once one accepts instructions, one enters a drama with a cast of players whose roles and narratives are determined not by the stated ideal of establishing 'the truth, the whole truth and nothing but the truth' but by the need to persuade the judge or jury that they are telling a more convincing story than their opponents. It is very difficult for the expert witness not to get caught up in this, particularly when he or she is required to be present in court. Mercifully, for a number of reasons, generally speaking it is the exception rather than the rule for the expert witness to be called to give oral evidence, at least in the UK.

It is not surprising that many professionals decline to take on this kind of work. There are guidelines and training packages available on how to write reports and to present evidence in court, but this chapter is not the place to cover these matters in any detail. Instead I offer three basic principles: be honest and impartial at all times; whenever possible draw on the available scientific evidence to support your opinions; and always keep within the boundaries of your own professional competence. I have endeavoured to adhere to these principles in writing this chapter.

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