The role of psychological variables in mass hysteria

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ABSTRACT

Despite the efforts of researchers, mass hysteria is difficult to predict and challenges management. Outbreaks often causes large financial losses, usually represented by the waste of study or work hours, the involvement of emergency personnel, hospitalisation of those involved, and disruption of routine. Very few psychological studies have been produced to date, and some of the issues raised were the methodological difficulties in defining and limiting the phenomena as an object of scientific inquiry. An analysis of psychological variables utilising case study methodology and the historical method indicates that these variables are present in episodes of mass hysteria, and that they are likely to play a key role in triggering the outbreak, in spreading symptoms, maintaining the mass hysteric's behaviour, and ending the episodes. This is an exploratory study, and further research remains to be done on all aspects of the role of psychological variables in these outbreaks. Computer simulation of mass hysteria may help understand these phenomena, which often catch people by surprise, greatly limiting data recording and analysis of its natural occurrence.

PREFACE

When I started working on this thesis, I didn't know I was embarking on a journey into the unknown. After collecting news media reports, court trial documents, memoirs and scientific papers for a couple of years, I found that a proper analysis of all documents would have taken several years to complete. However, in view of the brief period of time allocated to the completion of a thesis at a master's degree level, I discovered that I could only present the reader with a few glimpses of what might be in store for the psychologist interested in producing scientific knowledge about mass hysteria.

The introductory chapter includes definition of mass hysteria, a brief overview of the phenomena, methods employed and hypothesis, expected findings, personal motivations and justification for researching the topic.

Mass hysteria is a complex social phenomenon, which sometimes can be mistaken by other types of collective behaviour, may be part of or follow other social phenomena. Chapter 2 is devoted to clarifying these issues. The following chapter discusses the occurrence of mass hysteria in different environments and some socio-economic and political implications regarding the outbreaks.

The extensive references regarding the advantages of becoming sick in mass hysteria, along with keeping the mass hysteric under observation even in the absence of

plausible organic causes for his or her symptoms led me to investigate the role of reinforcers in these episodes. Chapter 4 includes a general analysis of the mass hysteric's behaviour from the perspective of social reinforcement theories, findings and conclusions.

Words such as anxiety, fear, stress, contagion of symptoms and suggestibility are commonly found in reports of mass hysteria, both from newspapers and scholarly journals. In Chapter 6, I present an overview of the corresponding psychological states in broad categories, such as individual responses, group processes and gender. In Chapter 5, I analyse psychological variables from four reports of mass hysteria, utilising case study methodology, present findings and make conclusions regarding the presence of psychological variables in episodes of mass hysteria. In Chapter 6 I discuss findings, the use of the historical and the case study method, point out critical issues in the psychological study of mass hysteria and make suggestions for further research.

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1.0 Introduction

In view of the scarcity of papers addressing psychological factors in the outbreaks of hysteria, in this thesis I attempted to: present an overview of the phenomena, distinguish mass hysteria from other social phenomena; identify and analyse relevant psychological variables preceding and during outbreaks. I briefly discussed the historical method and case study methodology and their limitations, present findings and propose ways of addressing these issues.

Mass hysteria has traditionally been an object of sociological inquiry. Although the term suggests a collective form of individual hysteria, mass hysteria and individual hysteria seem to be unrelated, even though some of the symptoms may be resemble somatoform disorders, according to their classification in the DSM IV-TR (2000).

Hysteria was an object of interest to Freud. However he wrote little on mass hysteria. Freud (1900, vol. 1, p. 50) describes hysteria as "a neurosis linked to the female sexual apparatus, which can produce outbreaks from time to time." Freud also included in his analysis his contention that men were likely to develop hysteria because of their connection with their mothers. Janet compared hysteria to other neuroses: "...the starting point of hysteria is the same as that of most great neuroses, it is a depression, an exhaustion, of the higher functions of the encephalon" (Janet, 1907, p. 333). Perhaps the only common factor between hysteria and mass hysteria is suggestibility, which Janet identified in individual episodes of hysteria: "we may say that the most important mental stigma of hysteria is suggestibility" (1907, p. 292).

On the other hand, Veith (1993) asserts that mass hysteria during the witch-hunts was individual hysteria expressed collectively:

> A careful study of this fantastic document *[Malleus Maleficarum]* reveals beyond doubt that many, if not most, of the witches as well as a great number of their victims described therein were simply hysterics who suffered from partial anaesthesia, mutism, blindness and convulsions, and, above all, from a variety of sexual delusions. (p.61)

Although many events are referred to as mass hysteria, only a number of these episodes fit the sociological criteria for definition of an outbreak:

> The rapid spread of illness signs and symptoms, for which there is no plausible organic aetiology. Episodes are typified by an anxiety-generating precipitant within the victims' immediate environment, and symptoms occur within close temporal proximity of exposure to the stimulus. Characteristics [are]: the appearance of symptoms with no plausible organic basis; transient and benign symptoms; rapid onset and recovery; occurrence in a segregated group; extraordinary anxiety; symptoms spread via line-of-sight; sound or oral communication; spread often down the age scale beginning in older or higher status persons; [there is] a preponderance of female participants; in most reports there is an identifiable index case (Bartholomew, 2005, p. 565).

Mass hysteria appears to take different shapes, according to its historical and socio-cultural settings. In a historical review of episodes of mass hysteria, Bartholomew and Wessely (2002) assert that mass hysteria from the 15th century to the early 18th century had histrionics as one of the main characteristics. The syndrome was coupled with belief in witches and demons, and caused dozens of outbreaks in convents, which took the shape of mass possession. These episodes happened in environments that demanded rigid discipline, prolonged fasting or near starvation diets, isolation and confinement to female-only living quarters. Episodes ended with exorcism. Some of these episodes led to accusations of witchcraft (Sluhovsky, 2002).

According to Bartholomew and Wessely (2002, p. 301), from the 18th century to the early 20th century, with the industrial revolution, outbreaks happened in the workplace, characterised by convulsions, abnormal movements, and neurological complaints. In the same period outbreaks took place in several European schools. Strict academic discipline was imposed on the pupils and symptoms included convulsions, involuntary movements, trembling, amnesia and laughing. Symptoms disappeared after the administration of electric shocks. The same authors found that from the 20th century onwards, epidemic hysteria episodes were characterised by concerns about food, air and water quality, including fears of mysterious odours. Mass hysteria can happen in schools, workplaces and social gatherings, and is often resolved by providing reassurance that the environment is safe.

I developed an interest in investigating psychological variables in episodes of mass hysteria after finding that most reports make several references to words such as "fear", "demanding environments," and "reassurance." Reported problem-solving strategies included exorcism (probably a form of suggestion), administering electric shock (punishment) and taking the involved people to hospital and keeping them under observation (probably a form of positive reinforcement).

I hypothesise that psychological variables are present in episodes of mass hysteria, and that these can be analysed according to several theories addressing individual and group behaviour. I attempt to demonstrate the presence of these variables, by applying case study methodology and the historical method.

The scientific study of mass hysteria as an object of psychological investigation could generate benefits by increasing scientific knowledge about triggers, the onset and management of outbreaks. It could also improve technical knowledge regarding prevention, management of outbreaks and recovery of those involved.

2.0 What is and what is not mass hysteria

Several reports produced by the news media name mass hysteria almost every collective behaviour. Its pejorative and sometimes controversial meaning may be profitably used to sell news. For instance, the Beatles performance and their audiences' response was often associated with mass hysteria in the 1960s. However, "craze" may have been a better name for these episodes, because there was the intentional gathering of people, aimed at obtaining pleasure, which may have been unavailable individually (Wessely, 1987).

In academic settings, the use of the term "mass hysteria" also seems controversial. Its validity for defining an episode is questioned (for example Nemery, Fischler, Boogaerts, Lison, & Willems, 2002). Considered pejorative, its impact on those involved and the consequences for data collection also concern researchers (for example, Pastel, 2001). Besides, the absence of consensus on about what constitutes mass hysteria (for example, Goode and Ben-Yehuda, 1994; Showalter, 1997) appear to be some of many sources of confusion. In this thesis, I shall refer to mass hysteria, mass psychogenic illness (MPI) and mass sociogenic illness (MSI) as synonyms.

2.1 Mass motor hysteria, mass anxiety hysteria, and mass pseudo-hysteria

Historical records indicate that mass hysteria may take basically two forms, which Wessely (1987) classified into: mass motor hysteria and mass anxiety hysteria. Mass motor hysteria is characterised by histrionics and intense muscular movements, precedes exposure to longstanding harsh discipline, and may last several years. This

was typical of episodes prior to the 20th century, when the cases of diabolical possession were common. According to Sluhovsky (2002), possession was a well defined syndrome, believed to be caused by a supernatural agent - the Devil, often diagnosed by clergymen and confirmed by doctors; during the witch-hunts, many physicians also attributed to the Devil several illnesses for which a physical cause could not be identified. Mass anxiety hysteria is often of short duration and follows the perception and redefinition of a harmless stimulus into a potentially dangerous agent. It may last a few hours or days, and symptoms resemble those of toxic poisoning. Wessely argues that an effective form of managing episodes of this type is by reducing anxiety in the group, as well as removing "the advantages of the sick role by withdrawal of social validation" (Wessely, 1987, p.118).

Mass hysteria may involve people of all ages, and as young as five years old (vide Bartholomew & Sirois, 1996; Bartholomew & Wessely, 2002). A variation of this episode, mass pseudo-hysteria, refers to the attribution of illness to mundane symptoms by hyper-vigilant authorities or parents, (Bartholomew & Sirois, 1996). Mass pseudo-hysteria may involve also involve two-year old children, as in the Christchurch Civic Crèche Case, reported by Hood (2001), in which ordinary child development issues, such as bed wetting, and fear of the dark were attributed to sexual abuse. Animals can be also affected by mass pseudo-hysteria. Bever (2000) argues that attribution of illness and death of animals and babies inclusive, to witchcraft may have been caused or strongly influenced by interpersonal conflict. Another example is the episode of Atlanta, in the 1980s, in which one mother commented that her child had looked pale since the beginning of the term. Shortly afterwards other mothers began examining their children and identified similar findings - dark circle under the

eyes, fatigue, headaches and occasional vomiting - and became convinced that the school was responsible (Philen, Kilbourne, McKinley, & Parrish, 1989).

2.2 Mass hysteria and other forms of collective behaviour

Some sociologists tend to take a detailed and objective approach to mass hysteria. Bartholomew (2001) classifies the phenomena into two different groups: collective delusions and mass hysteria. The first involves only a perception of an imaginary threat, such as sightings of UFOs, werewolves, bloodsucker creatures, and prophecies about the end of the world. Collective delusions may involve spreading irrational beliefs, but not illness symptoms (Ladendorf & Bartholomew, 2002, p. 51). However, the authors discuss the case of the mad gasser of Mattoon, which can be classified as both a collective delusion and mass hysteria, involving the spread of false beliefs and symptoms. The mad gasser of Mattoon, a city of 17.000 inhabitants in the state of Illinois, was an entity created by the media in the 1940s, who allegedly went from house to house, spraying an anaesthetic gas inside, and mysteriously disappearing. The first alleged victim indicated that she smelled a sweet odour coming from the window, felt paralysed and became sick with the smell. Her husband, who was working that night as a taxi driver, heard the news and rushed home, later declaring that he saw a prowler get in the house through the window. Other alleged gasser attacks followed, with the episode lasting approximately two weeks and ending when the extensive search by police, aided by the community, produced no evidence that a gasser indeed existed. (Ladendorf &, Bartholomew 2002; Bartholomew & Victor 2004).

Other forms of collective behaviour are crazes and riots. The latter involve the intentional gathering of people for obtaining gratification that may be unattainable individually, (Wessely 1987, p. 119). The Aum Shinrikyo cult can be defined as a craze, because people intentionally sought to join it to achieve ecstatic states, transcendence and immortality, which they may have believed to be unavailable from other sources. However, this craze culminated in mass hysteria. The leader of the cult, Shoko Asahara, often spoke about Armageddon, predicted the end of the world and decided to bring about Armageddon himself. Asahara involved many of his followers in the creation and release of weapons of mass destruction, and by the end of 1994 they made a trial of sarin gas (an odourless and colourless neurotoxic chemical) release in Matsumoto, killing four people (Lifton, 2000). Early in 1995, they believed to have mastered the manufacturing of the gas, and released it in the Tokyo subway system killing 12 people instantly and injuring thousands (Pangi, 2002). One hospital alone assisted 5500 people who sought medical checks following the accident (Taneda, 2005), but the total number of affected people is unknown.

The need for medical care of those affected, despite their symptoms being unrelated to a physical cause, seems to inevitably place mass hysteria in the medical field, attracting the interest of medical professionals (Balaratnasingam & Janca, 2006). The difficulty in identifying a subtle causal agent may lead them to attribute organic illnesses to mass hysteria. This seems to have been the case with the Legionnaires disease on occasions (Chang, & Gershwin 2005), when complaints of respiratory disease caused by the *Legionella pneumoniae* were attributed to mass hysteria.

The challenge of identifying such subtle causal agents and the risk of dismissing them in a diagnosis may lead to scepticism and raise doubts about the adequate assessment and testing of organic or physical causes. For example, the report of MPI attributed to a toxic exposure in a school in Tennessee by Jones, Craig, Hoy, Gunter, et al. (2000), attracted numerous criticisms in the form of letters to the editor, suggesting that environmental factors may have not been completely ruled out (Miller, Ashford, Goode, Black, Welch, Heuser, Rifkin, Jones, Craig, and Schaffner, 2000). Acceptable standards of exposure to chemicals are referenced to the level at which they cause cancer in rats, but other harmful levels may be dismissed as harmless even when they cause subtle physical and psychological symptoms; also, the number of individuals affected is unknown (Ryan & Morrow, 1992). This seems to be a particularly sensitive issue in the workplace, as employers could attribute to mass hysteria any collective complaint about poor working conditions, in this way excusing themselves from their responsibility for contributing to a healthy workplace.

2.3 The difference between mass hysteria and rebellion

Some episodes of mass hysteria have been considered group rebellion (for example de Certeau, 2000; Ong, 1982; 1987; 1988). Rebellion can be defined as "renewal of a war" (Barnhart, 1995, p. 640), and can be used as a synonym for "insurrection, sedition, revolt, mutiny, resistance [and] contumacy" (Soule & Howison, 1891, p. 343). Active or passive rebellion appear to be organised movements; the latter refers to non-violent resolution of social conflict, and may involve goal-setting, planning, and formal training (Moland, 2002). Moland also makes references to the Christian doctrine of "love and civility," as discussed by Martin Luther King, Jr., who

characterised passive resistance as "a struggle for justice and not to defeat or humiliate the oppressor" (2002, p. 450). In the case of outbreaks of hysteria in convents, the nuns' display of sexualised behaviour before their confessors and high ranking clerics of the opposite sex, as reported by de Certeau (2000) and Rapley (1998) does not seem to qualify the episode as passive resistance. On the other hand, anger can be observed in mass possession (Chen, Yen, Lin, & Yang, 2003; Ong, 1982; Shakya, 2005), as well as aggressive behaviour (Pineros, Rosselli, & Calderon, 1998), but these seem insufficient to characterise it as rebellion.

Rebellion, active or passive, seems to be a form of organised movement that requires the rebel to have some degree of autonomy. Individuals appear to be able to choose to take part in rebellions. Details from reports are not sufficient for conclusions regarding individual choice in mass hysteria. Perhaps the only aspect common to both is that the rebellious person and the mass hysteric may find themselves in situations where they would rather not be. According to Bartholomew and Wessely (2002) nuns were forced by their elders to join the convent, regardless of their own will. Malay workers brought numerous episodes of spirit possession onto the factory floor when their government applied the "New Economic Policy." This policy was in response to the racial rioting of 1969, against the unequal distribution of power and wealth among the several ethnic groups; it replaced cash cropping and fishing by work in multinational manufacturing plants (Ong, 1988, p. 29). The workers' only alternative to manufacturing work seemed to have been unemployment. Reports of school outbreaks indicate that they often take place just before school exams (Bugge, *2006; The Daily Monitor, 2003)*, while others happen just before students are expected to perform before an audience (Small, Propper, Randolph, & Eth, 1991).

Rebellion has been called mass hysteria for purposes of social control. Mahone reports an episode in 1911, in which a district commissioner reported "recent outbreaks of mania" (2006, p. 241), consisting of spirit possession and exorcisms, following a number of deaths in the region of Kamba, Kenya. The leaders of the 'mania' were identified as a man and a woman competing with each other for popularity. The man promised that "he would soon remove all Europeans from the territory," (p. 242) among other extraordinary actions. As the popularity of the couple grew, they disrupted the region's routine of work, which was restored after the imprisonment and deportation of several people involved (Mahone, 2006). The episode does not fit the current definition of mass hysteria described by Bartholomew (2005), as it seems to have been orchestrated by two people, clearly intent on rebelling against British dominance, manipulating people's beliefs and folklore to lead them into dissidence.

In authentic cases of mass hysteria, the response of the affected people is more likely to resemble submission to their leaders, rather than rebellion, despite the display of anger and aggression. Mass hysterics often faint, lose consciousness, and require medical care for symptoms that, according to Bartholomew and Wessely (2002), are transient and benign. Becker's (1973, pp.130-131) theories may provide a perspective on submission to the leader, as he argues that obedience to the all-powerful parent is the child's highest ambition. This need to obey disappears with time, but the need to be subject to someone remains. Thus, the mass hysterics appear to subject themselves to their leader, becoming dependent on him or her for care and protection.

2.4 Moral panics

Moral panics are also a subject that belongs in the field of sociology. The story below falls in the category of witch-hunts, which have been defined by Goode and Ben-Yehuda (1994) as moral panics. It was reported by Guskin (1981) in an analysis of the last witchcraft trial in England.

Jane Wenham was an old woman who lived in Walkern, Hertfordshire, England, in the seventeenth century. She had had two husbands; the first died in suspicious circumstances, according to the village's gossip. Her second husband publicly declared that he would not support her financially, and suspected she was a witch. In the following weeks she was accused of witchcraft, after asking a servant for straw and being refused. This was allegedly followed by the servant feeling compelled to run off madly and gather straw, and by the death of several animals belonging to the servant's master. Previously, Wenham had been accused of witchcraft when she knocked on a man's door at the time when his servant was making strange noises, removing her clothes to and crying. Cats showing Wenham's face were allegedly seen in the neighbourhood. Wenham had also been in trouble for stealing turnips and quarrelling with other villagers. The owner of the turnips saw his sheep die mysteriously "after he threatened Wenham" (Holmes, 1993, p. 50). A yeoman (a farmer owning small free holding) accused Wenham of causing loss of stock "to the value of £200 through her maleficence over the years." (Holmes, 1993, p. 50). Wenham was convicted of witchcraft, by a jury that "took two hours to decide, but then brought in a guilty verdict" (Guskin, 1981, p.53). However, the very judge who passed a guilty sentence on her took her case personally to Queen Anne, probably

moved by the controversy it created among villagers and learned men. Jane Wenham was pardoned.

Unlike those of many other accused witches, Jane's trial created controversy among her fellow villagers, because by that time, spectral evidence, according to Guskin (1981), was falling into discredit. Holmes argues that the case against Jane Wenham was engineered by local clergymen, eager to demonstrate the reality of witchcraft in face of growing scepticism; however this was not seen as favourable by the elites whose concerns "informed and shaped the juridical forms." (1993, p. 51) Despite its peculiarities as a witch-hunt, Jane Wenham's case can be described as a moral panic, similar to many witch-hunts from the Renaissance, according to Goode and Ben-Yehuda (1994). The ritual satanic and child abuse scares of the 1990's, as for instance reported by Hood (2001) and Webster (2005), and the SARS (Severe Acute Respiratory Syndrome) panic, as commented by Theodore (2003), are some examples of recent moral panics.

A distinction between moral panic and mass hysteria can sometimes be difficult to make. Goode and Ben-Yehuda (1994, p. 111) describe moral panic as a kind of mass hysteria, when exaggerated fear is one of the defining aspects of the moral panic, if fear is considered a result of mass mistaken beliefs, or collective delusion. When applying Goode and Ben-Yehuda's concept of moral panic, Bartholomew and Dickeson (1998, p. 34) state that "mass hysteria is an essential aspect of moral panic." Cohen in his classic study of mods and rockers defines moral panics:

> Societies appear to be subject, every now and then, to periods of moral panic. A condition, episode, person or group of persons emerge to become defined as a threat to societal values and interests; its nature is presented in a stereotypical fashion by the mass media; the moral barricades are manned by editors, bishops, politicians and other right-thinking people; socially accredited experts pronounce their diagnosis and solutions...Sometimes the panic passes and is forgotten, except in folklore and collective memory; at other times it has more serious and long lasting repercussions and might produce such changes as those in legal and social policy and even in the way society conceives itself. (Cohen, 1980, p.9)

For the sake of objectivity, I shall refer to moral panics as a societal engagement in fighting a real or imagined enemy, following Cohen's definition, and to mass hysteria as the symptoms displayed by groups of individuals who believed they were victims of a real or imagined enemy or threat, according to Bartholomew's (2005) definition of mass hysteria.

It appears that not all moral panics produce mass hysteria. According to Bartholomew (1993), episodes of mass hysteria originating from McCarthyism are unknown. McCarthyism is a form of witch-hunt that arose from the unsubstantiated claims, by US Senator Joseph McCarthy, that communists had subversively infiltrated government departments, causing irreparable losses to many accused people between 1950 and 1954 (McCarthy, 2007). However, it appears that most episodes of mass hysteria stem from moral panics, even if the alleged threat is intangible. Some moral panics are likely to produce symptoms of illness, and involve a large number of people; however, the opportunity to observe another person becoming ill may not be present, and so, therefore, mass hysteria may not be definitely inferred. The "onanist diseases" of the nineteenth century are an example, in which doctors promoted the idea that the practice of masturbation caused illnesses, including madness (Burg, 1988; Gilbert, 1975; Hall, 2003).

2.5 Mass hysteria, mass organic illness, and social chaos

Identifying the onset of an outbreak seems to be a complex task. Wilson recommends against diagnosing mass hysteria, asserting: "Rarely should the label of epidemic hysteria [be] applied...Epidemic hysteria is a diagnosis of exclusion" (2003, p. 58). Bartholomew states that although it is possible for the hysterical individual to mimic almost any symptom of physical illness, "epidemic hysteria has distinct characteristic features, and their confluence almost certainly indicates the presence of psychogenic symptoms"(2001, p. 11).

Mass hysteria may not be so easily distinguished from social chaos, as in the Chernobyl disaster, the Caesium contamination in the Brazilian city of Goiania, and the attacks of September 11. In these events a physical agent was present; however fear of harm may have been more harmful than the disasters themselves. It may have been difficult to assess danger accurately, and this could have triggered episodes of mass hysteria. According to Pastel (2001, p. 44), "the majority of outbreaks are triggered by an event, although rumours can also trigger outbreaks."

Establishing fear, anxiety, and emotions as a cause in episodes of mass hysteria can be a challenge as well. "Sometimes anxiety about a real phenomenon may cause people to misattribute events or even physical ailments to it" (Marian, 1998, p.8). However, in many cases the role of anxiety can never be verified. For instance, Bauer, Greve, Besh, Schramke, et al. (1992, p. 214), in a study that took place two years after the first reporting of symptoms in a problem building, indicated that "the solution of the problem involved a complete installation of a new ventilation/air-conditioning

system." Since there was no assessment of anxiety or any other psychological factors, it may be arguable that the sick building episode could have been better defined as mass hysteria, which was resolved by replacing the ventilation system, simultaneous with a belief that the new air conditioning system was better than the first, reducing anxiety and other possible non-physical causal agents.

3.0 Mass hysteria in different settings

3.1 Mass hysteria in communities and schools

Mass hysteria sometimes appears to be the last coping resource for a community in distress. Plague, famine, Protestant reform, socio-economic changes and great scientific discoveries threatening the social order were present at the times of the great witch-hunts, perhaps causing a generalized feeling of helplessness. Most scholars find it difficult, if not impossible, to attribute causal factors to the witch-hunts because of their complex nature.

Enclosed settings seem to be very favourable to outbreaks of hysteria, especially when rigid discipline and extenuating work or excessive demands are imposed. These conditions were present in the convent of the Order of St Ursula, in France, in 1634, on the occasion of the outbreaks of diabolic possession among the nuns, as portrayed in the film *The Devils* (Russell et al., 1991). Bartholomew and Wessely (2002, p. 300), analysed reports of mass hysteria prior to the 20th century and concluded that long-standing exposure to religious, academic or capitalist discipline was one of the essential factors of an outbreak.

Historically, mass possession seems to be a recurring form of mass hysteria and it appears to serve two purposes: confirm societal beliefs and values regarding the supernatural, and become a vehicle of communication between authorities and the possessed people. Recently, in Nepal, Shakya (2005) reported an episode in which 70 out of 300 girls displayed "disorganised" (p.1) behaviour, which was similar to

diabolical possession, attributed to the presence of an evil spirit in the school surroundings. Both in *The Devils* and in Shakya's report victims tended to display behaviours that, although grotesque and challenging, were accepted or tolerated, and seemed to convey a message supporting the current ideologies of each specific social context. The film *The Devils* shows nuns displaying behaviours such as mock sexual intercourse and nudity in sacred places. These behaviours appeared to validate beliefs, as stated in the *Malleus Maleficarum,* that women were weak and susceptible to evil.

According the report from Nepal (Shakya, 2005), victims displayed behaviours such as clenching their teeth, tightening fists, walking around the wells and making strange noises, as if they were influenced by the evil spirit of a mad woman who had died recently and was known to one of the students. Such behaviours appeared to be acceptable in that community in those circumstances, and confirmed the community's belief that supernatural agents do exist. Shakya noted that the girls were vulnerable to stressful situations, as all their teachers were males and the school had no record of employment of female teachers for more than two years. Utilising an evil spirit to communicate their problems may have helped them minimise their vulnerability and empowered them to voice their dissatisfactions and challenge the *status quo.*

3.2 Mass hysteria in the workplace

The factory can be a fertile environment for an outbreak of hysteria, with symptoms varying greatly from toxic poisoning to spirit possession. Research on occupational mass hysteria has been widely published, including: psychosocial aspects of indoor air

quality during crisis (Richey, 2003); stress and coping theories in MPI (Folkman & Lazarus, 1982); Repetitive Strain Injury (RSI) as a form of mass hysteria and the role of professionals in diagnosing it (Reid & Reynolds, 1990); spirit possession (Ong, 1988); mystery gas (Stahl & Lebedun, 1974); and toxic poisoning (Bartholomew, 2005). Singer (1982, p. 135) argues that "we would probably find it [MPI] as a contributing factor in industrial illness in a greater variety of settings than we are now willing to enter into accounting."

Triggers for an outbreak of occupational mass hysteria seem to combine internal and external factors. Some internal factors identified in these studies in industrial settings included employee-management relations, conflicting interests in power and access to resources, lack of recognition of social obligations to workers, work dissatisfaction and work stress. A number of external factors, as in the case of the Repetition Strain Injury (RSI) in several Australian industries, discussed by Reid & Reynolds (1990, p. 179), seem to have been economic in nature, such as: a growing trade deficit, the weakening of the Australian dollar, the advocacy of the use of new technologies, reduction in staff numbers and a social demand for higher production quotas.

Some of the few articles studying psychological aspects of mass hysteria include an analysis of reports of sick building syndrome (SBS), in which it was concluded that psychological factors alone cannot account for (SBS), but exposure to a contaminated environment could have harmful psychological consequences for workers (Bauer t al., 1992). In another study about the role of psychological variables in workplace-related disorders, Ryan and Morrow (1992) concluded that psychological factors might play a more relevant causal role in sick building syndromes and MPI than in other disorders.

The differential diagnosis of mass hysteria and mass organic illness in the workplace can be challenging, because of the risk of attributing psychological causes to misdiagnosed physical problems, and this can add to distress. Emotional distress may be present prior and throughout the episode; locating and quantifying it may also be a challenge. Selye (1974, p. 34) defines distress as a negative variant of stress. Ryan and Morrow (1992, pp. 220-222) studied a spectrum of workplace disorders, classifying them in four major groups: 1) Neurotoxic Disorders, characterised by exposure to heavy metals and organic solvents, producing symptoms like mood changes, mental and motor slowing, memory and concentration problems. 2) SBS, characterised by a variety of symptoms, but their causes cannot be attributed to one single toxin, defining the building as "dysfunctional". 3) Building Related Illness, which is related to the installation and maintenance of humidification and ventilation systems, producing flu-like symptoms or respiratory distress. 4) MPI, in which there is no identifiable pathogen. A proper diagnosis may be difficult because of the subtleties in behaviour changes and the amounts of toxic substances that are considered acceptable. Disregard of organic illnesses by management may trigger psychological distress, which may become conducive of mass hysteria (Ryan & Morrow, 1992, p. 223).

Possible hiding places for disorders that could be considered mass hysteria are the groups and subgroups of occupational syndromes. Repetitive Strain Injury (RSI) as a name for a group of symptoms for several occupational illnesses has changed its name over the decades, but it remains essentially the same. For instance, in New Zealand these illnesses are currently classified under OOS (Occupational Overuse Syndrome), as discussed in a newspaper article by Armstrong (2001). This also seems to be the

case with WRULD, Work Related Upper Limb Disorders, which affect office workers and computer operators in the United Kingdom (Sleator, Gore, & Vidler, 1998). SBS seems difficult to be distinguished from epidemic hysteria, because emotional factors play a relevant role in both (Ryan & Morrow, 1992). Chang and Gershwin (2004) argue that indoor allergens can cause severe allergic symptoms; distinguishing between those who are susceptible to allergies and those who are not can be a difficult task; symptoms of mass organic illness and mass hysteria are very similar (Ryan & Morrow, 1992). Labelling mass hysteria allergic responses to indoor air pollutants can also be used by management as an excuse to ignore indoor air quality problems affecting employees' health.

4.0 Social reinforcement and the changing shape of mass hysteria

"Almost all living things act to free themselves from harmful contacts"

(B.F. Skinner, 1972, p. 26)

I was inspired to investigate the mass hysteric's behaviour as a function of its consequences, after observing numerous references to 'secondary gains' and benefits associated with the 'sick role' (vide Ford, 1997; Gehlen, 1977; Wessely, 1987). In this chapter I try to demonstrated that behaviours that characterise mass hysteria are maintained by instrumental conditioning, and attempted to provide an analysis of historical records, utilising the historical method, and applying principles of behaviour analysis as discussed by Domjan, Grau, and Krause (2006).

4.1 The historical method

The historical method seems to be commonly used by historians of psychology. Shafer and Bennett's (1980) characterisation of the historical method seems to be useful for both the beginner and advanced researcher: it is consists of specialised tasks of identification, collection and presentation of evidence. An insightful comment about the use of the historical method has been made by Garraghan (1948), who argues that the historical method is not exclusive to the historian, but to all those who depend on the principles of evidence to make an assertion.

In order to make an effective use of the method, some issues must be considered. The following issues have been raised by Hilgard, Leary, and McCGuire, (1991): 1) that

one should strive to portray history in its own terms; 2) that by making connections between psychology and other domains of society and culture, historical research may enrich the field of psychology; 3) that an approach to historical research should include consideration of the actions of "great men" as well as the "*zeitgeist*," as both may provide a better understanding of historical facts if presented simultaneously; 4) that critical history seeks to overcome illusions and myths in order to expose historical facts; and 5) that a historian's subject or concern should determine the method to be employed and not vice-versa. Overall, the historical method seemed the most appropriate for gathering evidence of contingence between consequences and behaviours displayed by the mass hysteric. Historians do recommend the utilisation of primary sources whenever possible. In view the impossibility of accessing these in the case of Grandier, I utilised the compilations and discussions by Michel de Certeau (2000) and Robert Rapley (1998). It is possible to locate hundreds of volumes on the witchcraft trial of Urbain Grandier. However, the choice of these authors was due to the absence of criticism of the quality of their work.

4.2 Behaviour analysis

In instrumental conditioning, the presentation of stimuli following a specific behaviour can be classified into four procedures aimed at increasing or decreasing its frequency, as described by Domjan, Grau, and Krause (2006, pp. 134-135):

1) Positive reinforcement: presentation of a desirable stimulus, increasing the response rate;

2) Positive punishment: presentation of an aversive stimulus, suppressing or decreasing the response rate;

3) Negative reinforcement: removal or prevention of the occurrence of an aversive stimulus, increasing the response rate; related to escape and avoidance response;

4) Omission training: (or differential reinforcement of other behaviour) removal or prevention of the occurrence of a desirable stimulus, suppressing or decrease in response rate.

As we saw above, outbreaks of hysteria typically occur in demanding environments, containing variables often described as: "extraordinary stress" (R. Bartholomew, 2001), "anxiety-precipitants" (Bartholomew, 2005), "pre-existing tension" (Bartholomew & Sirois, 2000), "group anxiety" (Wessely, 1987), "justified [rational] fears" (Wessely, 2000). It appears that many behaviours that characterise mass hysteria are an attempt to avoid or escape, at least temporarily, an aversive stimulus. This attempt is, in turn, reinforced by those trying to succour the affected, by paying attention, removing the affected from the stressful environment, and by providing meaning to their behaviour. Nevertheless, an analysis of the mass hysteric behaviour from this perspective should take ethical issues into consideration, and avoid blaming the affected. Even if individuals were fully aware that their behaviour was maintained by its consequences, they may have not known about all possibilities of reinforcement or punished. For instance, some may hyperventilate while trying to reduce anxiety, being unaware that hyperventilation can cause vomiting (Bartholomew & Sirois, 1996).

4.3 Mass possession in the convent

Early records of mass hysteria include mass possessions in medieval religious communities. Several authors argue that some episodes of possession were basically drama (for example de Certeau, 2000; Newman, 1998; Rapley, 1998) revived in the thirteen century by the mendicant orders (Newman, 1998) to teach apostolic values. Historical records indicate that possession was framed by social, political, and religious norms that defined possession and determined who could be possessed. Sluhovsky (2002) argues that although monks displayed similar features to nuns' possession, the episodes received a different diagnosis, because of "the centrality of the male bodily integrity and control" (p. 1407), along with the sexual imagery of "a male entity taking possession of the female body" (p. 1407). *Incubi* (male demons) and *succubi* (female demons) according to the *Malleus Maleficarum* were both "lusting after women" (Institoris & Sprenger, 1948, p. 30). An equally relevant issue contributing to the absence of possession diagnosis among monks would have been the fact that demonic possession, along with epilepsy and lunacy, were considered "irregularities impeding ordination" (Kemp & Williams, 1987, p. 23). Possession did not interfere with the nuns' status; so long they abode by their vows.

Despite their relatively low status, nuns have always played a relevant role in the history of the church. *The Oxford Dictionary of Saints* provides some fascinating entries regarding saints' lives. Some virgins were declared saints even before the Catholic reformation (when many convents adopted a lifestyle of enclosure), as they supported church dogmas and defended their vows of chastity with their own lives. This was the case of Agnes, who preferred to be killed by the sword than giving up

her virginity in the fourth century. Many nuns were able to influence papal decisions, and that was the case of St Catherine of Siena, who persuaded the Pope to vary his strategies in the political battles between Church and State in the fifteenth century. St Teresa of Avila contributed to the church reformation by reforming her own order, the Carmelites, in the sixteenth century. Although the lives of many saints were guided by visions, Sluhovsky (1996, p. 1039) argues that these visions could be interpreted either as a divine apparition or demonic possessions, and it depended on socio-cultural and personal contexts along with the religious tensions of the time.

Mass possession in the convent also seems to have been correlated to the outcomes of the reformation, probably perceived as undesirable to the nuns. According to Sluhovsky, most reports of mass possession come from the fifteenth and sixteenth century, after the Catholic reformation. He cites that the "early Ursulines compared themselves to active Amazons," and were then confined to the cloister, having hardly any contact with males, except their confessors (2002, p. 1392). De Certeau (2000) and Rapley (1998) correlate the possessions of Loudun with sexual abstinence; in their view the end of the plague always brought about increased sexual behaviour; burdened by vows of chastity, nuns could only express their sexuality in the form of dreams and visions, which were the basis for their possession. Although chastity seemed to have been in practice since antiquity, contact with the opposite sex could have been a subtle outlet for sexual fantasies. Besides isolation and sexual repression, nuns also had much trouble sustaining their own communities in the post-Reformation period, when their ability to earn an income became even more limited (vide Walker, 1999).

Mass possession was not limited to convents. Ceschia and Cozzi (1989) refer to a case of an alleged collective demonic possession affecting a group of women in the small northern Italian village of Verzegnis, in 1879. The authors cite triggering factors as the absence of males in the region by work-related exodus, and consequently sexual frustration, the feeling of being left alone, and the demands of running their family and community by themselves.

4.4 Rewards for the possessed

There are several methodological limitations in studying possession as a class of behaviour. The only records available are in writing, and translated from another language. Even if it were possible to read all the documents available, knowledge about that culture obtained in this way would only mirror the issues that caught attention from learned men, and these may not necessarily reflect all the issues relevant to behaviour analysis. For these reasons, this study was limited to a brief analysis of some records of possession, linking antecedents and consequents of behaviour whenever possible

Mass possession was sometimes considered a result of witchcraft. However, Sluhovsky (2000, p. 1380) found that only five in forty-five cases of mass possessions resulted in accusations of witchcraft. He also argues that possession often took place within "new or recently reformed religious orders" (p.1389). The traditional treatment for possession was exorcism, in which priests supposedly interacted with the entity inhabiting the body of the accused, and commanded its expelling.

Many girls were forced to convent life by their parents. This was one historical form of child abuse, as discussed by deMause (1998). It is likely that abandonment and deprivation of attention from childhood were the basis for Jeanne des Anges successful religious career. Rapley (1998. p.208) also states "her death was treated as that of a saint." Jeanne des Anges led "one of the most famous (or infamous) episodes in the history of diabolical possession" (Sluhovsky, 2000, p. 1379). According to de Certeau (2000) and Rapley (1998), she managed the convent of St Ursula, opened in 1626 in Loudun. It had sixteen nuns, and offered a boarding school for girls. The plague claimed many lives, including the nuns' confessors. It was by the end of the plague in 1632, that Sister Marthe saw the ghost of a churchman in her room; two days a black sphere was said to have attacked later Sister Marthe and two other nuns in the refectory. A week or so later, an invisible hand left three hawthorn needles on Jeanne des Anges hand, which allegedly triggered the possessions.

Exorcisms followed the possessions; the Devil was asked several questions and answered them from the allegedly possessed body of Jeanne des Anges. His answers changed the form of the apparitions gradually until they took the shape of Urbain Grandier, the Jesuit priest of the parish *St-Pierre-du-Marche,* who had been trained to be the confidant and spiritual advisor of nobles, and enjoyed a high standard of living. Grandier was a controversial figure, suspect of having sexual relations with a number of women. In one of the exorcism sessions Jeanne vomited a pact, which had been allegedly signed by Grandier with his own blood, and this was used in his trial as one of the main proofs that he practiced witchcraft. He was found guilty and burned at the stake in 1634 (Rapley, 1998; Certeau, 2000).

Jeanne des Anges took charge of the convent one year after its opening, and was determined to make it a success, according to Rapley (1998). The possessions may have been a source of reinforcement for most of her activities, including her tasks as a convent manager. The episodes of possession seemed to have cause great disruption of the routine, causing them close the school and lose their boarders, a source of income. According to de Certeau, (2000) Jeanne persuaded Baron de Laubardemont, to confiscate the Huguenots' property and transfer it to her convent, as well as to obtain funding for the convent's expenses from the king's "privy purse" when they ran out of resources (2000, pp. 204-205). It is arguable that Jeanne des Anges leadership skills, badly employed in a moral sense, contributed to the death of Grandier. However, her behaviour may have met the expectations of all those involved, as she appears to have been reinforced in every possible way.

De Certeau argues that she used her career as "the means to show herself" (p. 223). She suffered an accident at the age of four, becoming permanently deformed with a slight hunchback appearance, after which she was prevented from taking part in any social activity, while her mother "showed off her sisters" (p. 223). She was sent to the convent shortly after, returning home "disgusted with the Benedictine life" of strictness (p.223). "When a suitor appeared for the young lady" (de Certeau, p. 223), her mother disapproved the relationship, and Jeanne went back to the convent.

If Jeanne de Anges was an attention seeker, possession was one of her sources of reward. Positive reinforcement of Jeanne's behaviours were characterised by the presentation of attention by the exorcists, physicians and representatives of the secular law. In one night of September 1632, at the end of the plague, a junior nun, Sister

Marthe saw the ghost of her dead confessor. Historians argue that it was Jeanne des Anges who changed the shape of the apparitions until they turned into the figure of Urbain Grandier, the "libidinous priest in the town," because she was fascinated with him (Rapley, 1998, p. 74). Both de Certeau (2000) and Rapley (1998) indicate that exorcists always turned to her to hear news from the Devil, as she was the highest in the convent hierarchy. It is likely that her decision to take the first ghost sighting experience as her own derived from her ability to envision the unfolding of events, as she had knowledge of the possession in the convent of Aix-en-Provence (Rapley, 2000), which also resulted in an allegation of witchcraft (Sluhovsky, 2000).

Despite potential rewards for the possessed, not all convents had records of possession, and not all nuns became possessed. Possession could have been a risky business. The prioress' endorsement seemed essential, but it is likely that not all prioresses would consider the possibility of hosting the Devil in their convents. In some cases, convents were closed by ecclesiastical authorities due to mass possession (Sluhovsky, 2000). Regarding risks for the individual displaying possession, there were alternatives to the diagnosis, and the possessed "had to convince clerics, inquisitors, exorcists, doctors, and lay viewers that they were, indeed, possessed and not witches, melancholic, epileptic, or simply mad" (Sluhovsky, 1996, p. 1045). Individual differences may have been another variable determining who was fit to play the role of possessed and who was not. Not all nuns perceived their environments in the same way. Besides that, there was a belief that God only chose special people to be possessed (Rapley, 2000).

Some historians argue that possession was a form of protest; and it seems to have been extensively maintained by positive and negative reinforcement. The nuns could voice their discontent, be heard, and held not liable (Sluhovsky, 2000, p. 1338). This was coupled with receiving attention. Their increased social contact seemed to have been a source of positive reinforcement, as well. Isolation was minimised, and this seemed to have been a form of negative reinforcement. Avoiding or escaping boring tasks at least temporarily, such as repetitive prayer, could also have been a form of negative reinforcement. In the case of Loudun, the nuns were moved to family homes and were put on a special diet (Rapley, 1998). Famine was a common epidemic in the early modern period (Appleby, 1980), and there is no reason to believe that the impact of the famine on the nuns was different to the rest of the population. The obtaining of a special diet could have been another form of positive reinforcement. Besides that, there was an audience for their possession, who came from as far as Italy and England (Sluhovsky 2000). It appears that Jeanne was in charge of the Devil's appearance, "as the convulsions [we]re reserved for general assembly" (de Certeau, 2000, p. 87).

Possessed nuns displayed the following behaviours: "they exhibited supernatural physical strength, developed aversion to sacred objects, such as the Eucharist, cursed their confessors, priests or mother superiors, screamed and shouted but also fainted, vomited, suffered fits, paralysis, contortions and convulsions, lost consciousness and even sank into coma" (Sluhovsky, 2000, p. 1385). Not all behaviours permit an analysis due to their complexity and lack of details. For instance, supernatural strength seems to be popularly reported in some kinds of psychotic crisis. The DSM-IV refers to this as "catatonic motor behaviours" (2000, p. 300). However, what appears to have been supernatural strength could also have been a combination of

strength and agility, as it is often reported when a group attempts to hold an individual. Coma and complete loss of consciousness may be as difficult to analyse, because records do not allow a complete understanding of the phenomena in the light of physiological, social, and psychological theories. The ability to speak in tongues is another challenge, because, besides its rarity, little is known about the possessed nuns' exposure to foreign languages.

Nuns not only received reinforcers, but also administered negative stimuli by cursing their superiors, exorcists, confessors, and priests. Cursing and other forms of profanity may have also produced temporary removal or delay of the presentation of aversive stimuli to the nuns. It is likely that the interlocutors had to cope with their own feelings of embarrassment, before proceeding with their tasks. Most of the behaviours that characterised profanity seemed to have always been directed towards people in higher hierarchical positions. LaPointe (2006) describes some of the physiological responses: "profanity and other obscene words produce physical effects in people who read or hear them, such as an elevated cardiac rate, increased galvanic skin response, blushing, trembling, shallow breathing, and in extreme cases loss of normally regulated bowel and bladder function" (p.vii).

Another class of behaviour was eroticism. Rapley (1998, p. 172) states "eroticism seems to have been a universal feature of those stricken;" and these included sexually explicit language, reporting of dreams of a sexual nature, mock intercourse, and nudity. Thus, eroticism could be understood not only as a protest against their vows of chastity, but also as a source of embarrassment to those in power, as they had professed their vows of chastity, too. Manuals of sex therapy abound with

explanations of human sexual arousal by visual and auditory stimuli (vide Masters, Johnson, & Kolodny, 1987). Sexual behaviour, despite its unconditioned and instinctive component, is mostly learned. A detailed analysis of sexual behaviour as self-reinforcement for the nuns would require knowledge of their sexual experience, if any, which seems unavailable. However, their behaviour certainly impacted on the viewers, and may have been a form of negative reinforcement, because while their superiors, priests, confessors had to cope with their own sexual feelings, any of their actions perceived as punishment may have been delayed. Since erotic behaviour was attributed to the Devil, they could enjoy their sexuality, which was impossible in any other way.

Many nuns suffered cuts and abrasions during possession episodes (de Certeau, 2000); these may have not been perceived as punishment, as this self-inflicted harm became the very source of attention from physicians and exorcists. There are limitations to understanding self-inflicted harm among nuns, because despite informing about the harsh conditions that characterised convent life, written records do not allow to explore pain threshold. It is also arguable that penance, a common convent practice and partial treatment for possession, is unlikely to have been perceived as a form of punishment, as it involved prayer and fasting, which were already a part of the nuns' quotidian.

4.5 The changing shape of the Devil

The Devil was the culprit in earlier forms of mass hysteria; fears of toxic poisoning by food, water, and air have replaced the Devil nowadays. For many, hosting these fears seems to have been as rewarding as hosting the Devil. From a broad perspective, episodes of mass hysteria seemed to have been triggered by apparently different factors after the Industrial Revolution than those triggering possession in earlier centuries. While episodes of mass hysteria are characterised by exposure to stress (Vide Bartholomew, 2001; 2005) not all extremely stressful and anxiety-generating circumstances produce episodes of mass hysteria. One common factor in the onset of these episodes seems to be the leaders' or authorities' sanction. Bartholomew (2005, p. 565) indicates that it often starts with the eldest or highest in the social order, going down the age scale. If Jeanne des Anges had chosen to consider the junior nun's ghost sighting experience as melancholy, 'humours,' or plain madness, this case may have not developed into mass hysteria.

In a similar way, the Melbourne airport episode (Bartholomew, 2005) started with a news agency employee collapsing, followed by 56 people, suspected victims of toxic poisoning that was supposedly disseminated through the air conditioning system. Not all people who collapse in a terminal trigger an episode of mass hysteria. A number of combining factors may be required to start an outbreak: for example a threat like terrorism; sources of suggestion, such as the media and health professionals inclined to accept a threat without assessing its magnitude and likelihood; and people who may be vulnerable because of their limited coping skills, level of suggestibility, or just because they are in need of social reinforcers. In Showalter's (1997, p. 17) opinion,

hysterical epidemics require at least three ingredients: 1)"medical theorists and enthusiasts," 2) "unhappy vulnerable patients," 3) "a supportive cultural environment."

Media reports did not clarify the index case's hierarchical position in the Melbourne episode. However, it is known that she was a mature woman, whose employment with a news agency may have given her enough authority to start the outbreak of hysteria. Her position may have increased the likelihood of reinforcers as well. Had the medical authorities who attended the case emphasized that her collapse was due to her personal circumstances, the outbreak may have not happened.

If mass hysteria is maintained by reinforcement, it can be suppressed by positive punishment. One of the greatest revolutions in the textile industry happened with the invention of the power loom in 1785 (Philip's, 2005), increasing industrial production and greatly reducing the number of staff required early in the nineteenth century. Bartholomew and Sirois (2000) associate this event with an outbreak of mass hysteria in a factory in 1787, in which twenty-four people including two girls of the age of ten and one man exhibited symptoms of "anxiety, strangulations, and very strong convulsions" (p. 501), lasting between fifteen minutes and twenty four hours. However these 'symptoms' disappeared with the administration of electric shocks by a physician.

The behaviour of mass hysterics in schools also seems to be under the same rules of maintenance by positive and negative reinforcement, and punishment. Positive punishment seems to have been equally effective in suppressing typical behaviours of

mass hysterics. Bartholomew and Dannielle (2007) cite several episodes of mass hysteria in German schools between 1890 and 1910, including two reported by Palmer (1892) involving altered states of consciousness, convulsions, and insensitivity to pain and tremor among school girls. Bartholomew and Wessely (2002, p. 301) also cite outbreaks with similar characteristics in several European schools, that were preceded by "strict academic discipline." Most of the symptoms seemed to have been a class of behaviours incompatible with performing the required tasks. Trembling, shaking, convulsions, compulsive laughing, altered consciousness and amnesia were incompatible with writing, reciting memorised arithmetic, and even gymnastics. According to the authors, electric shock was used to 'treat' the affected, and 'symptoms' disappeared soon after; as in the factory outbreak in 1787.

What seems to be a common feature to all episodes of mass hysteria is that characteristic behaviours of an outbreak and performing ordinary tasks are mutually exclusive. Demonic possession was incompatible with prayer and other forms of devotion to God. Convulsions were incompatible with standing upright to operate textile machinery; hand tremors were incompatible with writing at school, and so on.

It seems clear that in the cases discussed above, positive punishment, the presentation of a negative stimulus was enough to eliminate behaviours that characterise mass hysteria. With the development of ethics in the medical and social sciences, practices such as the administration of electric shocks may not be available. However, Wessely recommends "to remove the advantages of the sick role" (1987, p. 118), which can be understood as omission training. Ethical issues may prevent omission training. If there was any form of toxic poisoning in the episode in the Melbourne airport,

paramedical staff would have compromised their performance, and have probably been prosecuted for professional negligence, along with other possible types of prosecution for malpractice. The challenge of preventing the development of mass hysteria could lie in the ability to quickly rule out any real threat.

Mass hysteria has changed its shape in the workplace as well. Instead of fainting and convulsions, outbreaks in occupational settings in the 1980s, caused complete loss or reduction of muscular activity, severe pain, and numbness. This characterised RSI (Repetition Strain Injury) which produced many victims and several law suits against employers, as for instance the cases cited in Reid and Reynolds (1990). To complicate matters further, some complaints of RSI did involve tissue damage, and it is likely that some employers may have used the term 'mass hysteria' to excuse themselves from taking occupational health measures to improve work conditions.

Like their predecessors, episodes in the twentieth century also seem to be characterised by behaviour that is maintained by instrumental conditioning. Reid and Reynolds (1990) discuss several political and economic variables involving outbreaks of RSI in Australia in the 1990s. While many employers may have taken advantage of the situation by attributing occupational illnesses to mass hysteria, employees may also have taken advantage of the crisis by filing law suits against their employers, and winning court battles.

4.6 Mass hysteria in non-Western cultures

Mass hysteria seems to be a term that defines one form of collective behaviour in western cultures. Defining forms of collective behaviour from other cultures can be problematic, as for instance the case of *koro*, already discussed in this thesis. Ong (1982; 1987; 1988) who studied mass possession in multinational industries in Malaysia, argues that the labelling of those episodes as a psychiatric disturbance, prevented the understanding of the dynamics of resistance to capitalism in that country.

Knowledge of the cultural significance of behaviours and reinforcers is necessary for a deeper analysis of each case. Without these, any reference to them can only be a generalised account of causal relations between behaviour and consequences. Shakya (2005) reports an epidemic of hysteria in school girls in Nepal, who believed there were influenced by the spirit of a dead village woman. Shakya argues that the problem was solved by isolating the affected and removing secondary gains. Pineros et al. (1998, p. 1425) report an episode of mass hysteria in an indigenous group in Colombia affecting three young adult men and six adolescent women who believed they were victims of *maleficio,* similar to possession, and restored their health through the aid of the tribe's shaman, who devoted his time to healing the affected. In the study of spirit possession in Malaysian factories by Ong (1982, 1987), the author reports that these episodes were interrupted by removing the affected from the production area, followed by spiritual healing practices.

Some episodes of mass hysteria seem to be a form of release of tension in the form of dance, as well as a temporary avoidance of exposure to negative stimuli. Norman (1945) discusses an outbreak in Japan in 1867, during the Tokugawa rule, when people were impoverished, oppressed, and felt unsure about government decisions affecting the economy. Thousands abandoned their posts to dance in frenzy on the streets. Whoever was dancing could not be at work at the same time. They were celebrating the appearance of talismans that had supposedly fallen out of the skies on the eve of the fall of the government, believing the talismans were a form of good luck. In Norman's (1945) view, the episode was similar to the St Vitus dance, which took place in the Middle Ages, when people felt oppressed and insecure about their rulers, the role of the church and the bubonic plague.

Being attacked by an invisible or impossible to catch person or animal is another common feature in reports of mass hysteria, and it seems to be equally rewarding for the affected, who receive attention from physicians, the media, and the community. Jacobs (1965) discusses the phantom slasher of Taipei, China, reported in the media in 1956, who simultaneously appeared in many districts, allegedly attacking between 8 and 30 people, mostly children, as young as three months and up to the age eight, plus one adult. One baby was allegedly attacked while being carried on their mothers' back, in the traditional Chinese way. Others were allegedly attacked while playing outdoors, or walking to school. While having their wound treated by the doctor and being questioned about the event, most victims could not remember the appearance of the aggressor or details of the attack. Some concluded during medical examinations, that they may have been wounded in a different way than by being attacked by a slasher. Police investigations concluded that cuts were a result of

intentional or accidental self-harm. The baby was slashed by a woman who accidentally stuck his umbrella on his sleeves. In East Delhi, India, fifty-one people reported being attacked by a monkey-like creature at night on the streets, frequently during times of power failure, with the majority of the alleged attacks happening between 1:00 and 6:00 am during the summer month of May of 2001. Although an attack by a monkey may be suggestive of skin lacerations, caused by biting and scratching, Verma and Srivastava (2003) report that most of the alleged victims showed bruises and abrasions.

In order to analyse cases such as the dance frenzy in Japan, the phantom slasher of Taipei, and the monkey-man creature of East Delhi, a deeper understanding of the culture and cultural values may be required in order to capture social structures that frame such behaviours. Dance frenzies have been recorded in Europe, being the *tarantella* and the St Vitus dance mania some of the most popular (Bartholomew, 2000), however in the Japanese case, the frenzy was coupled with celebrating the appearance of talismans, allegedly fallen from the skies on the eve of the fall of the government. The content and meaning of these talismans, along with culturally sanctioned ways to deal with an oppressive government would allow for a better understanding of the episode from the perspective of behaviour analysis. In the case of Taipei, Jacobs (1965) lists a number of cultural factors that could have influenced the episode: children's vulnerability and the risk of their parents being considered neglectful; the belief in attracting luck by children's blood-letting; and the razor being utilised as a tool for mutilation, as typical aggression response. Although fear of being attacked at night may be a universal feature, attacks by a monkey-man, or monkey-like creature may be invested with deep cultural meanings, regarding the

interaction between monkey and humans, and the significance of this interaction in that culture.

4.7 Conclusions

In this section I have demonstrated how mass hysteria can be understood as a class of behaviours maintained by instrumental conditioning. In view of the limited amount of information available, the discussion took a generalised form, and research remains to be done on several aspects of these behaviours, such as the individual's characteristics and individual responses to conditioning, cultural values of reinforcers, and the meaning of these behaviours in each specific culture. A quantitative analysis of these episodes would be most useful, and it may be possible with laboratory simulation. However, it appears that, regardless of time and geographical location, behaviour is maintained by its consequences and by isolating variables that maintain behaviours that characterise mass hysteria, it may be possible to prevent it.

5.0 An analysis of psychological variables in mass hysteria utilising case study methodology

This investigation aimed to identify psychological variables, by comparing definitions of psychological states and cognitive processes and to those reported in episodes of mass hysteria. Findings are presented and discussed.

The process by which individuals develop symptoms of mass hysteria remains to be explained. However, some variables have been identified as predictors. Small, Propper, Randolph, and Eth (1991) reported that in Santa Monica, California in 1989, two thousand people gathered in an auditorium to attend a high school concert called "Stair-way-of-the-stars," in which approximately 600 students were supposed to take part. During the afternoon rehearsals, some girls complained of paint odours. At the time of the concert they started fainting, with 247 child performers becoming ill, forcing officials to evacuate the auditorium. Nobody in the audience became ill, and the authors argue that, although parents blamed toxic fumes for the illness, there were clear characteristic features of mass hysteria. The authors analysed reports from 93% of a total of 517 student performers who participated in the study, and found that the best predictor of mass hysteria symptoms was observing a friend become sick. Other predictors included having a history of chronic medical illness, such as asthma, lower grades, and having experienced the death of a relative or friend.

5.1 Individual Responses

I described here only a sample of individual responses in mass hysteria, selecting the ones that appear more to be more frequently reported in mass hysteria: fear, stress, anxiety, and neuroticism.

Some studies have criticised the application of psychological and psychiatric labels to those involved in episodes of mass hysteria. For instance, Bartholomew (1994) argues that the *koro* epidemics are largely defined as mass psychopathology, however, only a minority of individuals show symptoms of major psychiatric disorders. *Koro* is usually defined as fear and anxiety about the shrinking and disappearance of genitals into the body, believed to be caused by contact with spirits or following the eating of certain foods (Bartholomew, 1994; 2000; Tseng, 1988). It is common in certain parts of Asia, and the same phenomenon has been reported in some parts of Africa under the name of *juju* (Dzokoto & Adams, 2005). Other studies have criticised the medicalisation of social issues Orr (1999) criticises psychiatrists for treating anxiety as an individual problem when it originates from group panic or terror. In the author's opinion, the anxiety generated by the *War of the Worlds*, broadcast on the eve of World War II, and the anxieties about the Cold War, sponsored by the American State are likely to have led individuals to seek psychiatric help, and in order to offer effective help, psychiatrists should take into account these societal problems. This kind of criticism make us aware of the risks of psychologising and medicalising dysfunctional social processes. However, these processes have different impacts on different individuals.

5.1.1 Fear

It seems common knowledge that fear is often more harmful than the possibility of physical damage in mass hysteria. Loewenstein, Weber, Hsee, and Welch (2001, p. 267) start their article with the quote: "The truth is that Chernobyl fear has done more damage than Chernobyl itself." They criticise risk assessment theories, stating that "virtually all current theories of choice under risk or uncertainty are cognitive and consequentialist" (p. 267) and that they assume that people utilise some kind of "expectation-based calculus" to make a choice of the best outcome (p. 267). They propose the risk-as-feelings hypothesis and demonstrate that emotional reactions to risky situations, and not cognitive evaluations regarding outcomes, are what drive behaviour. Defining fear as a feeling, Loewenstein, Weber, Hsee and Welch (2001, p. 280) also assert that affective responses may be mediated by factors such as vividness of imagery, proximity in time and other variables that may play a minimal role in cognitive evaluations. If this is so, it is likely that fear plays a key causal role in mass hysteria.

A large number of cases of mass hysteria report fainting or syncope attacks, and this could be a response to fear as a cognitive process that may have been mediated by evolutionary coping. Brascha, Yoshioka, Masukawa and Stockman, (2005) argue that this behaviour may have been encoded in genomes since the Neolithic period, when intertribal predation was common, and a typical response to perceived threat was dropping to the ground, signalling to other members that there was danger about, giving the impression of being severely injured, and increasing the odds of personal survival.

Fear seems to be present in every episode of mass hysteria. People appear to be unaware of their coping abilities in these circumstances, and this is often paired with anxiety, due to the difficulty in assessing danger objectively and foreseeing the unfolding of events. Fear of death is likely to be a relevant variable. Fear may also have provided sanction for the destruction of several Jewish communities, witch-hunted and accused of poisoning wells during the Black Death in the Middle Ages (Ritzmann, 1998). Becker's works, such as *The Denial of Death* (1973) and *Escape from Evil* (1975) are devoted to the elaboration of theories supporting the claims that mortality plays an essential role in people's lives. Part of the hypothesis developed by the terror management theory, which is based on Becker's theories, claims that

> If a psychological structure provides protection against the potential terror engendered by knowledge of mortality, then bringing thoughts of mortality into consciousness should increase concern for maintaining that structure. (Solomon, Greenberg, & Pyszczynski, 1998, p. 20).

It appears that death primes are presented to those involved in most outbreaks of hysteria. The Devil as the culprit in episodes of mass possession, was associated with death and destruction (Guiley, 1999). Alleged poisonous agents in recent outbreaks are often perceived as death threats (e.g. Bartholomew, 2005). It is likely that emergency care personnel may not be aware that by attending episodes of mass hysteria wearing masks and other poison-proof equipment, as they did in the Melbourne Airport episode (Bartholomew, 2005), they seem to add to distress, as their presence may function as a death prime. In a study of mortality salience and cognitive dissonance, Friedman & Arndt, (2005) found that mortality salience

increases concern about cognitive consistency. These authors define cognitive dissonance according to Festinger's (1957) theory: discrepancy between cognitions causes aversive emotions, and attempts to eliminate or minimise contradictory cognitions are made until consistency is achieved. It is arguable that death primes are present in mass hysteria, and those involved are likely to attempt to resolve any cognitive dissonance by trying to locate and eliminate death threat, even when there is none.

5.1.2 Stress, anxiety, and neuroticism

Stress is a common term found in reports of mass hysteria. According to Lazarus (1999), the word 'stress' was first used in the 14th Century to indicate hardship; he refers to models of stress that indicate pressure on a social, physiological or psychological system, arguing that stress and coping exist in a part-whole relationship, in which emotion is part of both (1999, p. 37). In a study of MPI in the workplace, Colligan and Stockton (1978, p. 93) found that stress is related to boredom, heightened by production-line pressure, along with other life stresses. Similarly, another study identifies stressors, such as job dissatisfaction defined by the number of attempts to change jobs, reporting of job problems and a difficult relationship with a supervisor (Stahl & Lebedun, 1974). Like many other studies, they do not explain why many others who are also bored, under the same pressures, and have similar life stresses, do not become affected by mass hysteria. Moreover, not all stressful environments produce mass hysteria. Perhaps the only possible generalisation is that environments that breed mass hysteria are physically and emotionally demanding.

Anxiety may be better understood as a function of fear in the context of mass hysteria. Beck, Emery and Greenberg (2005, p. 10) distinguish between affective response and cognitive processes, defining fear as a process of evaluating reality, and anxiety as an affective response. Anxiety has been identified by Bartholomew and Sirois (2000, p. 495) as typical of outbreaks: "mass hysteria is precipitated by the sudden appearance of an anxiety-generating stimulus following the redefinition of an innocuous or imaginary odour or agent that is perceived as an immediate threat." Beck et al. state that "measures that are successful in reducing the danger will generally reduce the anxiety" (2005, p. 15). These measures are commonly discussed as safety reassurance to the involved. However, reassurance may be effective only if the ones who deliver reassurance are considered trustworthy. This has been discussed in the article *Telling the Truth to the Terrified* (*The Economist*, 2006), in which the diagnosis by local authorities (mass poisoning) contrasted sharply with the diagnosis by authorities from Moscow (mass psychogenic illness), in an outbreak of mysterious illness in Chechnya, Russia, in December 2005.

Neuroticism has been positively correlated with mass hysteria. Huang, Zhang, Yang, Luo, and He (2005) report an episode of mass hysteria involving fourteen girls, which was induced by one girl's ingesting seven or eight diazepam tablets as a suicide attempt. Her classmates, unable to stop her, resorted to each ingesting one to three of the remaining tablets. Symptoms included headaches, nausea, tachypnoea, and asthenia. These disappeared with treatment by suggestion. The authors applied the Eysenk personality scale, youth version questionnaire, to children in both control group (children who did not take part in the episode) and in the mass hysteria group. Results indicated that children who belonged to the mass hysteria group scored higher

on neuroticism than did the children from the control group. However, the absence of baseline does not allow us to infer levels of neuroticism prior to the outbreak, making it impossible to know whether or not the outbreak influenced the scores for neuroticism.

5.2 Group processes

Despite the scarcity of social psychological research on the topic of mass hysteria, some theories developed by social psychologists may be applicable to the episodes. Le Bon (1896, p.129), a contemporary of Freud, believed that the individual can cease to have his or her own will and ability to reason, acting as an automaton, when manipulated by ideas that are propagated by affirmation, contagion, and repetition. Although Freud had little to say about mass hysteria, in his book *Group Psychology and Analysis of the Ego* (1922, p. 21) he asserts that a group is "an obedient herd, which could never live without a master," and presupposes that an idea may lead a group. The dynamics of the development of an outbreak appear to show clearly that the idea of sickness originates with the observation of the index case's alleged symptoms, and is maintained by affirmation from health professionals, repetition of the idea, and contagion of symptoms. The circumstances in which outbreaks occur do not seem to allow for challenging the sickness beliefs and the episode has generally run its full course, by the time laboratory tests and examinations return negative results.

5.2.1. Leadership

It appears authorities' decisions are essential in maintaining and ending outbreaks. The role of authorities in these episodes seems to be highlighted when analysing mass hysteria in the context of moral panics. Equipped with knowledge and power, that are socially validated, these authorities can end an outbreak by declaring that there is no threat, according to their findings from clinical or laboratory tests, or criminal investigation results. Diagnosing mass hysteria is sometimes enough to end an episode (for details, please refer to column "How it ended" in Table 1).

These authorities' decisions are probably best understood in the light of leadership theories. Hogan and Kaiser (2005) define leadership as the ability to convey individuals' efforts towards a common goal. They also state that "history is the history of social movements led by individuals" (2005, p. 170) and this may be an approach to studying mass hysteria as a result of people's actions rather than abstract social variables. Four different types of skills are required for successful leadership: intrapersonal and interpersonal skills, ability to build and motivate a team, and ability to plan, co-ordinate, budget and overview business activities (2005, p. 172). It is likely that the use of these skills influence episodes of mass hysteria.

5.2.2 Social exclusion, mimicry, contagion, and suggestibility

Some theories of affiliation may be applicable to mass hysteria. Twenge. M., Baumeister, DeWall, Ciarocco, and Bartels(2007) found that social exclusion decreases prosocial behaviour. In their experiment, subjects who were told they

would end up alone in life were less likely to donate money for charity, and engage in helping other members of their group. They argue that belonging, as opposed to social exclusion, is the basis of pro-social behaviour, which involves mutual help, support, and occasional love for one other. Participating in the processes of decision making probably increases the sense of belonging. Zeldin and MacNeil (2006), in a study of youth engagement, argue that communities work better when voices of all stakeholders, including youth, are represented in the decision-making processes. The circumstances in which some episodes of mass hysteria take place do not seem conducive to feelings of belongingness: nuns were forced into a way of life (Bartholomew & Wessely, 2002); fish packing plants employees were subject to a fast-paced routine, exposed to irritants and odorants, and had no autonomy (House & Holness, 1997); school girls were separated from their male schoolmates by changes in administrative policy, apparently against their will (Dhadphale & Shaikh, 1983). Decrease in prosocial behaviour may be inferred from disruption of a religious routine among the nuns, loss of productivity among factory workers, and waste of school hours by students.

One of the classic theories of learning is the theory of modelling developed by Albert Bandura, which explains "learning by example" (1971, pp. 1-5), that is, the individual learns by identification with a model and imitation of the model's behaviour. Recent theories, such as the perception-behaviour link (Chartrand & Bargh, 1999) posit that the mere perception of a behaviour is likely to increase the likelihood of engaging in that behaviour oneself. They assert that this process is often nonconscious, unintentional, and independent of affiliation goal (1999, p. 900). However, when they manipulated affiliation in their experiment, by allowing eye contact between

participants and experimenters, participants tended to express liking towards the experimenter, and established smoother interactions when they were mimicked by the experimenter. In another study (van Baaren, Holland, Steenaert, & van Knippenberg, 2003) found that waitresses received more tips when they mimicked their customers. The activation of behaviour by its mere perception, along with the probability of increasing social affiliation, could be a determinant of an outbreak, especially if it happens in oppressive environments. Mimicry may also explain why many medically vital signs among those involved in some episodes of mass hysteria are normal, despite their claims of sickness (vide Gupta, Vohra, Madaan, & Gaur, 2001).

Contagion, which seems clearly related to imitation, appears to be widely accepted as a characteristic of mass hysteria. Symptoms spread down the hierarchical age or social scale (Bartholomew, 2005). Since the symptoms are considered emotional in origin (Balaratnasingam & Janca, 2006), it may be plausible to consider that contagion is emotional in nature. Le Bon (1896, p. 126) states that "in the case of men collected in a crowd all emotions are very rapidly contagious, which explains the suddenness of panics."

Recent studies define emotional contagion as "the tendency to automatically mimic and synchronize expressions, vocalizations, postures, and movements with those of another person's [sic] and, consequently to converge emotionally" Hatfield, Cacioppo, and Rapson (1992) cited in (Hatfield, Cacioppo, & Rapson, 1993, p. 96). Emotional convergence may be related to empathy. Twenge, et al. argue that empathy requires the internal simulation of another's emotion. Although Hobfoll (1998, p. 208) argues that empathy may be a conduit for stress, empathy may not be a

necessary condition for emotional contagion. A study of mood transfer between persons found that participants tend to spontaneously imitate the target person's vocal expression of emotion, and that there is a non-conscious transfer of mood between persons (Neumann & Strack, 2000). This may have implications for the management of outbreaks, and indicates that exposure to seeing others developing a set of symptoms is likely to cause one to develop the same symptoms.

Some recent episodes of mass hysteria resemble mass poisoning. While administering first aid to those involved, emergency personnel, administrators, or both, often raise suspicions of mass poisoning. By doing so, they seem to prime stereotypes of victims of poisoning with the behaviour of those present, and this may lead to catastrophic consequences. Priming a social construct has been found to alter behaviour and even self-perception (Chartrand & Bargh, 1999). When a social construct is activated, it affects the behaviour of the targeted group (de Marree, Wheeler, & Petty, 2005). These authors performed an experiment in which college students were primed with the elderly stereotype by unscrambling sentences containing words such as wrinkle; these students walked slower down the hall after the experiment than did control participants. One of the possible explanations the authors offered for the result was that "the social functional account holds that activating social constructs cause people to want to fit in with their environment" (de Marree et al. 2005, p. 658). They also found that some individuals are likely to change their self-perception after being primed with a social construct. For instance, individuals reported to be luckier after a number 7 (vs a number 13) prime (de Maree, Wheeler, & Petty, 2005, p. 657). Relying on objective measures and providing

plausible explanations for the symptoms may be an alternative to presenting stereotype primes.

Suggestibility seems to be a popular term in reports of mass hysteria. Sidis (1899, p. 310) argues that suggestibility "is the only way by which the social brute can become conscious of the emotions that agitates its fellows." Lange and Fleming (2005) studied cognitive influences in the perception of somatic changes in a feigned chemical release and found that individuals who were told they would be exposed to chemicals reported more symptoms at a greater frequency than those who were told they would be exposed to room air. Lindberg (2002) scattered three hundred pounds of sand in an abandoned theatre room of a university building and asked participants to fill in questionnaires in that room. Half of them were informed that the sand had been used in the production of the play "Lawrence of Arabia" (p. 125). It was suggested to the other half, through confederates, that it was a harmful substance to the skin and lungs. Individuals who perceived the situation as harmful were more likely to report symptoms, such as skin irritation, headaches, eye irritation and difficulty breathing. Lindberg concluded that "fear is a fundamental producer of psychologically caused physical symptoms" (2002, p. 135). Suggestion seems to impair the ability to assess risks objectively.

One important social aspect of illness complaints was raised by Nettleton (2006) who asserts that society does not readily grant permission to be ill in the absence of disease. It is likely that this is the rationale for attempts to attribute a physical cause to symptoms of mass hysteria. In some episodes, reports indicate that the index case collapsed for personal reasons, which could not have been generalised as a cause for

the symptoms displayed by all the involved. In the Melbourne Airport episode, for example, the index case told the media that she had been deprived of food for hours before fainting (Bolt, 2005), and in the episode at the cotton factory in Lancashire, England, 1787 the index case seems to have fainted because she was scared of mice (Bartholomew & Sirois, 2000). However, in view of the need to validate symptoms, these facts seem to have been completely dismissed.

5.2.3 The role of gender

Most reports of mass hysteria indicate that the large majority of those involved are females. Lorber, Mazzoni, and Kirsch (2007) argue that the preponderance of females in outbreaks of MPI may be due to gender-linked differences in the effects of modelling on psychogenic symptoms. On the other hand, Showalter (1997; 2002) argues that women are more vulnerable to MPI because of their social position. Regarding mass possession in the convent, McNamara (1996, p. 236) argues that religious communities of women tended to be invisible, until they were adopted by a male into the world of book and charters. Arguably, mass possession and its economic impact on the religious community may have contributed to becoming visible.

Possession was sometimes interpreted according to the social status of the nuns. Sluhovsky (2002, p. 1396) argues that upper class nuns were more likely to be perceived as visionaries than possessed. Brain (1989, p.15) argues that Saint Paul disseminated the belief that authority is divinely ordained, and this may have led people to perceive any woman who challenged authority as a witch, because witches

"represent a reversal of all that is considered normal behavior in a particular society" (p. 15). Helena of Scheuberin, cited as "an aggressive and independent woman, who was not afraid to speak her mind," inspired the writing of the *Malleus Maleficarum* because, despite his efforts, Institoris could not prove her a witch (Broedel, 1998, p. 1). The case of Jeanne des Anges may also be illustrative of the impact of social position in the perception of the possessed nun. Jeanne des Anges, the prioress of the Convent of St Ursula, led the possession among the nuns, but after the death of the priest who was accused of bewitching them, Jeanne was perceived as a mystic and visionary(de Certeau, 2000; Rapley, 1998).

Women's social roles have been seen as more stressful than men's (vide Hobfoll, 1998). If stress is a predisposing factor for developing mass hysteria symptoms, women may be perceived as vulnerable. According to Hobfoll (1986, p. 6), women tend to have larger social networks than men, engage in activities that involve social support of others, and these require that they meet several role expectations. The author also argues that women are more likely to be exposed to negative life events. Although the arguments above are valuable for the understanding gender issues in the socialisation of women, they do not account for the presence of males in episodes of mass hysteria. They do not provide an explanation for mass hysteria among monks in monasteries late in the Middle Ages (Sluhovsky, 2002), nor explain episodes like the one that happened in Addis Ababa University in Ethiopia, in 2003, in which several males fainted after becoming aware of the death, by unknown causes, of two students in the university (*The Daily Monitor*, 2003).

5.3 The Case Study Method

In view of the unpredictable nature of episodes of mass hysteria, an analysis of these events in natural conditions seems to be invariably historical. Some historical events may be quantifiable, however they may require to be analysed as singular episodes, and contain a large number of data. One example is the study by van Ommeren, Sharma, Komproe, Poudyal, et al. (2001) in which they analysed an episode of mass hysteria in a Bhutanese camp, after locating 57% of the 153 children involved. They excluded those under the age of 12 years, because of translation issues, and identified a mean age of 15.8 years. After introducing a number of psychiatric instruments to manipulate the independent variables, and treating the variables statistically they concluded that trauma and loss and significantly co-related with involvement in the outbreaks. Their study confirmed previous findings: the study of the outbreak in Santa Monica (Small, Propper, Randolph, 1991) and Eth indicated that children who had experienced the death of a relative or friend were more likely to be involved. However, the same findings could not be generalised to all outbreaks of hysteria, in view of the peculiarities of each episode.

I attempted to analyse the role of psychological variables in several outbreaks of hysteria, and found on occasion, a large number of variables specific to one episode; in other cases I found a very small number of variables common to several episodes. However, considering the exploratory nature of this study, I found that quantifying the variables would prevent me from providing a detailed overview of the phenomena.

After searching for the a suitable method, I found the method of structured, focused comparison by George and Bennett (2005), which was designed to study historical experience and produce knowledge of foreign policy problems. It is defined as follows:

> The method is "structured" in that the researcher writes general questions that reflect the research objective and that these questions are asked of each case under study to guide and standardize data collection, thereby making systematic comparison and cumulation of the findings of the cases possible. The method is "focused" in that it deals only with certain aspects of the historical cases examined. The requirements for structure and focus apply equally to individual cases since they may be later joined by additional cases (p. 67).

I identified one hundred and seventy eight cases. From these I selected four cases, to answer one question: what in this report indicates the presence of psychological variables? The selection method was first based on number of words: reports containing less than 150 words were excluded; reports that received negative criticism or indicated scepticism by the scientific community were also excluded. From the pool of reports that met these criteria I selected those that had been discussed in scholarly journals. However, I chose one report involving males in order to obtain gender balance in this study. Apart from a brief reference to episodes of mass hysteria among males in medieval monasteries by Sluhovsky (2002), I did not find any reports of male-only mass hysteria discussed in scholarly journals.

The study of mass hysteria has been shaped mostly by qualitative methodology. Some researchers claim that qualitative research does not belong in the traditional

framework of research, (for example, Michell, 2004; Morgan, 1996). However, Capaldi and Proctor argue that both qualitative and quantitative methods have a place in psychology, and that qualitative methods can be helpful for isolating problems in a whole system, and that "nothing prevents the investigator from forming hypothesis for later test..." (2005, p. 265). Michell (2004, p. 315) also argues that "in the first instance, many attributes of interest are experienced as qualitative, not as quantitative," and that elevating the latter above all others is anti-scientific. Methodology has always been a subject of concern in psychology. Even Skinner (1956, p. 233), who adopted the hypothetico-deductive method to identify behaviour laws in psychology, warned us: "science does not progress by carefully designed steps called experiments." In his view, science progresses in the context of chaotic and accidental processes.

5.4.1 Methodological limitations and advantages

Current episodes of mass hysteria appear to be unpredictable, infrequent, and of short duration. When an episode takes place, it tends to catch everybody by surprise, decreasing the probability of appropriate recording of the event.

Often in cases of mass hysteria, there is no baseline for behaviours, social conditions are dynamic, and it is difficult to obtain measures (van Ommeren et al., 2001). Moreover, findings are not easily generalised to other outbreaks. Data collection, where possible, can often be carried out days or even years after the episode. The prevalence and incidence of mass hysteria seem to be unknown (Ryan & Morrow, 1992). Although laboratory conditions analogous to outbreaks of hysteria could

provide some understanding of the phenomenon, ethical issues greatly limit laboratory replication. Perhaps one future possibility involves expanding laboratory conditions and integrating more variables by computer simulation of mass hysteria episodes.

Another dimension of data collection issues relates to the pejorative connotation associated with the term 'mass hysteria.' Thus, research participants could worry about being stigmatised (vide Small, Propper, Randolph, & Eth, 1991). In lay language, hysteria means an out-of-control state of mind. Attempts to attenuate its pejorative nomenclature have been made by several authors. Some authors have chosen to use the terms "MPI" (Singer, 1982; Folkman & Lazarus 1982; Lindberg, 2002; Clements 2003; Khiem, Huan, Phuong, Dang, Hoang, Phuong, et al. 2003) or "MSI" (Philen et al., 1989; Nemery et al. 2002; Weir, 2005). Pastel (2001, p. 44) suggests "outbreaks of multiple unexplained symptoms." Goodyear-Smith and Laidlaw (1998, p. 17) use "social contagion" as a synonym for mass hysteria.

Methodological limitations are not restricted to data collection hurdles and choice of nomenclature for an episode. Mass hysteria is an object of scientific inquiry in gender studies, and feminists like Showalter (1997) emphasise the differences of roles between men and women in outbreaks. However, in her study of mass hysteria, she refers to a broad range of phenomena, including alien abduction, satanic ritual abuse and many others. This not only makes an interdisciplinary study of mass hysteria almost unfeasible, but can also become the source of confusion among readers.

An analysis of psychological phenomena within sociological phenomena seems to be fraught with methodological challenges, and I attempted to restrict my study to variables of concern to psychology only. According to Haig (2005), phenomena are abstract empirical regularities, which depend on data and data analysis to be observed. Choosing the most appropriate method is likely to produce a better understanding of the phenomena. In my attempts to identify these variables, I presupposed that psychological variables would take the form of empirical entities that could be regularly observed in mass hysteria.

Some methodological advantages of the method of structured, focussed comparison included the possibility of observing and reporting details of specific episodes that normally would escape quantitative analysis. An index case seems to trigger an episode, by displaying completely different behaviour from another index case in another episode. For instance, Sister Marthe, the index case in the mass possession at the Convent of Saint Ursula, triggered the episode by reporting the sighting of a ghost in her room (Rapley, 1998); in the episode at the Melbourne airport, the index case triggered the episode by fainting (Bartholomew, 2005). The wealth of details regarding behaviours such as the index cases' would generally escape observation in a quantitative analysis.

There are other recommendations for using this method. George and Bennett (2005, p. 152) argue, for instance, that this method may be an alternative to utilising statistical analysis, especially when there are an insufficient number of cases for each phenomenon. They also indicate that this method may be suitable for studies in which experimentation may run into ethical problems. It could be an alternative to

controlled comparison, which requires that two cases should resemble each other in every respect, but one. Some theorists argue that a qualitative analysis often precedes quantitative analysis (for example, Michell, 2004) and this may be the first step for selection of data from mass hysteria episodes for subsequent hypothesis generating and testing.

5.4.2 Case studies

I attempted to perform an analysis of four reports of mass hysteria, aiming to identify and discuss the following psychological variables: stress, anxiety, suggestibility, social exclusion, death denial or fear of death, emotional contagion, and gender. I utilise the method of structured, focused comparison, as proposed by George and Bennett (2005), defined in page 57.

Case Summaries

I wrote a summary of each of the reports, attempting to reproduce them as accurately as possible. All of the episodes in the four reports fit the definition by Bartholomew (2005); however they are completely different from each other regarding historical and geographical location, number of people involved, nature of the symptoms, and how the episodes ended. Some details are missing from the original, and they are pointed out in the analysis when significant.

Case 1 – The Devil in the Shape of a Man, England, 1617 (Gaskill, 1998, pp. 142-171)

This report, containing approximately nineteen thousand words, was published in the journal *Historical Research*, in which Gaskill discusses the prosecution for witchcraft of a Kentish farmer, drawing from original court records, and other historical documents. William Godfrey was accused of witchcraft by his neighbours in 1617, the same year in which Reverend Thomas Cooper's treatise *The Mystery of Witchcraft* appeared in London bookshops. Godfrey lived in New Romney, situated in the southeastern region of Kent, one-day's ride away from London. The climate was harsh, and "the land was rife with `marsh ague'--a form of malaria--and mortality was high" (p.148).

Economic and political struggles contributed to the increasing social and political instability of the region. Economic decline affected farmers and increased the number of poor people. Fishermen and similar others were impoverished "by the silting up of the harbour and the lack of navigable rivers on which to fall back" (p. 150); these included the "kiddlemen (a Kentish word for nets)" (p.150). Corruption was common, and despite the region being less populated after the Black Death, disputes over property were also common. Church services were becoming less regular because of the rise of Protestantism and the proliferation of separatist groups.

Godfrey was married and had two children, a fifteen-year old daughter and an eighteen-year old son. The whole family tended sheep that Godfrey ran in several acres of land. He earned his living as a farmer, "but also rented out a house and close

near his own; and in the previous decade he had lived there himself" (p. 151). Amongst other possessions, Godfrey had ducks and probably pigs, a barn and barnyard and possibly spaniel dogs. He also had a firearm, like very few men in the militia had, and was "among the sufficiently wealthy to pay the poor rate in 1617" (pp. 151-152). Although Godfrey was illiterate, "he clearly cared about the education of the succeeding generation" (p. 152). What is known about his character is that "he appears to have been assertive and argumentative, and had a sense of humour" (p.152).

William Clarke, a fifty year-old kiddleman, and one of Godfrey's closer neighbours, was the first to present evidence before the judge. Clark told the judge that, while he was tending sheep, Godfrey's ducks wandered away through the fence into his property, so he told his son to chase them back. Godfrey's daughter watched the chase and allegedly shouted out that "they should repent it and that they would be quit with them for it" (p. 152). Following the episode, Clarke's lambs allegedly went lame, the churn no longer produced butter and he wondered if the loss of a bullock was due to the same fact: that Godfrey had bewitched them. Clarke discussed the matter with a woman from another parish and she confirmed that Godfrey had promised revenge.

John and Susan Barber rented Godfrey's property for one year, around 1609. Godfrey hoped that the tenants would buy the property at the end of the lease, but they were eager to move out, because they had heard "various ghostly sounds including knocking, dripping and spitting upon the ceiling" (p.153). Susan Barber was pregnant. After the child was born, Susan was left alone to rest, her mother being the last to leave..."but within a quarter of an hour a shriek broke the silence, and all was

panic..." (pp. 153-154). According to Susan's testimony, Godfrey's devils attempted to drag her child away, which she saved by getting hold of its feet. Susan also testified that Godfrey's devils appeared at other times in the shape of spaniel dogs. When the Barbers left the property, Godfrey allegedly told them to stay or they would regret it.

John Barber subsequently suffered a number of accidents, and believed that they were a result of Godfrey's revenge by witchcraft. These accidents included splitting his thumb, "which a surgeon had to cauterize to staunch the bleeding" (p. 154). Godfrey wanted to purchase piglets from John Barber, who refused to sell them. This upset Godfrey and "within a few days the sow's milk dried up, and the piglets' growth was impaired, and several horses also died" (p. 154). In this atmosphere of fear and conflict, "small events became loaded with great meaning for John Barber" (p. 154). While Barber entertained Thomas Riggden at his house, Riggden's wife went to buy meat from the butcher, who was drinking with Godfrey. As an alleged consequence of interrupting Godfrey, "Riggden's cow broke its leg" in the following morning (p.154). Gaskill (1998) argues that it is almost certain that neither Holton nor Barber had heard of the Rev. Cooper or his treatise.

Several other people from the community made depositions of a similar nature against Godfrey. Some of them referred to misfortunes, which had happened several years earlier, and one referred to the death of the one-year old baby, James Holton in 1614, whose father was a carpenter who rented Godfrey's house. Despite five thousand pages of written testimony, the jurors threw the case out. Godfrey and his family faced several accusations of theft before and after the trial of witchcraft. Despite that, he became a yeoman a few years later.

Case 2 – Addis Ababa University, Ethiopia (Addis Tribune, 2003; The Daily Monitor, 2003)

This summary is the only taking from media reports. Scholarly articles reporting mass hysteria among men were not found at the time of the literature review. The episode was reported by the *Addis Tribune* in 879 words and by *The Daily Monitor* in 396 words, and I chose to include it aiming at a gender balance in the discussion of the episodes.

Twenty-eight male students fainted in a cafeteria at dinnertime, one week after the death of two students. One died after taking an overdoses of anti-stress tablets, the other died just after washing his clothes, however, results of post-mortem examinations were not released. Two others fainted in the next day following the mass fainting at the cafeteria. Some believed the students were under stress, as the newspaper reports: "psychological strain could be the main culprit for the crises as it was a period of mid-semester examinations" (*Addis Tribune*, 2003). The university had ten thousand students enrolled. Mid-year exams had to be re-scheduled because of the episode.

One source of tension seemed to have been the appointment of a new president and executive members, who "the teachers believe[d] was pro-government and did not represent them;" besides that, some teachers "were publicly accusing students of being sympathizers of the new administration" (*Addis Tribune*, 2003). One student declared to the newspaper that he was under the threat of having his exam results dismissed because he was accused of supporting the new management. Another

student declared: "the majority of university students were developing psychological frustrations due to unhealthy relations with their respective teachers" (*Addis Tribune*, 2003). Besides that, students demonstrated dissatisfaction with the food provided by the university and some suspected food poisoning: "our food, particularly on Sundays, Wednesdays and Fridays, is not also good." (*Addis Tribune*, 2003). However, test results did not confirm these suspicions. Some fainted while discussing the situation with other students, and several gathered around the president's office out of fear of sleeping in their dormitories. Searches for anyone who had fainted unnoticed in the university compound were carried out, producing no results.

Several members of the police were present while the student body boycotted their breakfast, and few students were present at lunch time in the cafes. Seven of the twenty eight who had fainted, remained in hospital after receiving first aid, "they complained of weakness, muscle cramp, and breathlessness" (*The Daily Monitor*, 2003). Two others fainted in the following day. However, "vital signs were normal, except for one asthmatic student" (*The Daily Monitor*, 2003). The Minister of Education, who was a woman and ex-student of that university, helped them cope with the crisis, by aiding in their transport to hospital and providing emotional support, which included sharing her experience as a student of that university. Doctors again diagnosed mass hysteria (*The Daily Monitor*, 2003).

Case 3 - The Coca-Cola incident in Belgium, 1999 (Nemer et al., 2002, pp. 1657-1667)

The paper summarised here was written by a group of independent academics who declared that they had no financial interests in the Coca-Cola and other competing companies. According to the authors, they summarised, in approximately nine thousand words, the official report of the episode and complemented it with additional information taken from unpublished reports to present it to an international audience. It was then published in the journal *Food and Chemical Toxicology*:

Belgium experienced "a serious outbreak of health complaints associated with the consumption of Coca-Cola products" (p. 1657) in June 1999, which also affected northern France. Sale and consumption of Coca-Cola drinks were forbidden during several weeks, which caused an "estimated cost of US$ 103 million" (p. 1657) due to the recall and destruction of "approximately 17 million units cases of Coca-Cola and other soft drinks" (p. 1657).

Pupils from a secondary school in Bornem, near Antwerp, were admitted to hospital because they felt sick after they drank Coca-Cola at lunch time on 8 June 1999. Complaints were first made in the afternoon, by 10 children from different classrooms. The only common aspect of the complaint was that all the children had drunk Coca-Cola, and they inconsistently reported variations of taste and smell. The children were taken to hospital because there were no doctors available in the area. According to information that can neither be fully confirmed nor denied "when these first children had been taken ill, staff went to different classes to look for other sick

pupils, asking who had drank Coca-Cola and was not feeling well" (p.1658). This brought about a second round of illness and hospitalisation. Other pupils were hospitalised after they left school, and others were hospitalised in the following morning, adding to a total of 37 admissions, being 9 boys and 28 girls, aged 10 to 13 years. According to the authors, this represented an "attack rate of 16% (28/179) in girls and 9% (9/101) in boys ....[t]heir main symptoms included abdominal discomfort, headache, diarrhoea, nausea, malaise, respiratory problems, trembling and dizziness" (p. 1658). Clinical examination and tests did not indicate toxic poisoning.

Health authorities were informed and all the bottles related to the incident, along with others produced in the same plant were recalled by Coca-Cola Belgium. "The Bornem incident was reported by the evening television news bulletins" (p. 1658). Coca-Cola confirmed in a press release that there were problems with the quality of the drinks, but informed the public that there was no risk, although "the possibility existed that consumption of their product was likely to cause headaches, nausea and abdominal cramps" (p. 1658).

The context of the episode included "an ongoing major food crisis in Belgium," known as the "dioxin crisis," in which animal feeds were contaminated by polychlorinated biphenyl, dibenzofurans and dioxins, which became public on 25 May 1999 (p.1659). The health scare was followed by a "massive recall" of all poultry products, "followed by almost all meat and dairy products" (p. 1659). On 13 June, the national election date, "the Ministers of Health and Agriculture were forced to resign" (p. 1659). The crisis was a topic of conversation everywhere. Scientists told the media that "even minimal amounts of chemicals could seriously affect health" (p.

1659). Soft drinks were shown being trashed alongside impressive numbers of "dead chickens being dumped..." (1665). The authors cited a number of factors that interfered with risk perception: rage against failing authorities and against food processing practices; dread, because of the perceived risk of being harmed by minimal quantities of chemicals; and inability to monitor risk, because the potentially harmful agents could not be easily perceived.

Over the days after the first incident, other pupils from other parts of the country, became ill after drinking various types of Coca-Cola drinks available mostly cans from vending machines and reported to the emergency department. Most children were taken to hospital by ambulance with media coverage. A total of seventy-five children from these schools were involved; aged 13-19. The authors report that "the attack rate was 4% in girls (72/1666) and 1% in boys (3/394)" (p. 1659). Symptoms were similar to those reported in the first incident. "No serious disease was diagnosed, and no consistent clinical or laboratory anomalies were found in these adolescents" (p. 1659). This time cans were allegedly contaminated, and "they came from a different bottling plant than the bottles involved in the first episode" (p. 1659).

All Coca-Cola products were forbidden in Belgium on 14 June. The authors indicated that "[t]he spread of the 'poisoning by Coca-Cola drinks' (also across the border into France)... were widely reported in the media, usually in close connection with the effects of the dioxin crisis" (p. 1659).

Many adults were also affected. The Belgium Poison Control Centre, "manned by physicians on a 24 h/24 h basis"...received 783 calls concerning "one or more

symptomatic subjects." (p. 1659), and they counted 943 affected people. Of those, "52% were female, 37% were male, 11% of unknown gender, 187 symptomatic subjects were under 15, with 52 of those being under 4 years old." (p. 1659). After an inquiry about the possibility of haemolysis (destruction of blood cells and release of haemoglobin contained in them), and a statement by the Minister of Health of the possibility of haemolysis by drinking Coca-Cola, 10 cases were reported in the media. However, "an analysis of hospital records and laboratory tests by a team of academic haematologists" did not produce any evidence of haemolysis (p.1660).

Earlier toxicological investigations indicate that, according to records from The Coca-Cola Company, symptoms may have been related to "a contamination of the carbon dioxide (CO_2), by Carbonyl Sulfide (COS) which may hydrolyse to hydrogen sulfide (H_2S)" (p. 1660). Toxicity was unlikely due to very low levels. Fungicide applied on wooden pallets, utilised for transportation, was found on the outside of the cans. This was the reported cause of illness in other schools, however, "[again,] levels reported were extremely low and unlikely to have caused systemic poisoning" (p. 1661).

Local government, independent local and international laboratories failed to identify toxic agents in further "toxicological analyses of bottles and cans, as well as other materials seized in relation to the various outbreaks..." (p. 1662). Patient records also did not indicate intoxication, although they were of poor quality. Despite that, all Coca-Cola products were forbidden in Belgium on 14 June. Coca-Cola re-designed the packaging for its products, creating green lids and caps, and reintroduced all drinks to the market on 23 June, along with extensive written apologies, published in the newspapers.

Epidemiological studies carried out by administering a questionnaire in schools, indicated that there was a strong association between drinking Coca-Cola and the occurrence of symptoms in the episode in Bornem. This led the authors to conclude that in the first episode, this association must have been true and the episode could not have been solely attributed to MSI. In another words, despite the very low risk of toxicity, the authors considered the possibility of an individual's reaction to these chemicals as a possible trigger of mass hysteria. This association was weaker in the other schools and the authors indicated that MSI was more likely.

***Case 4 – "Mass psychogenic illness following oral cholera immunisation," Vietnam, 2001* (Khiem et al., 2003, pp. 4527-4531).**

Cholera is a fatal disease caused by bacteria, producing death within hours if untreated. This 4.000 word case report was produced by 14 researchers, 4 of them affiliated to the Pasteur Institute, 3 to the International Vaccine Institute from South Korea, and the remaining 7 affiliated to different health departments in Vietnam. Their main claims were that the adverse reactions to a vaccine, which was alleged to contain active cholera, did not correspond to symptoms of cholera infection. In their opinion, toxic poisoning was also unlikely in view of the negative results of tests and examinations, despite the news media and news website suggestions to the contrary.

A vaccine called "oral bivalent cholera" had been administered in over five million doses, without reports of adverse reaction. When a case was detected, the population was considered at risk, and the vaccine became available through the vaccine

programme. It could not be purchased individually. The vaccine was usually given in two doses, two to four weeks apart, to children over the age of two years.

Three cases of cholera were identified between 4 and 24 November, 2001. An urgent decision to administer mass vaccination of pupils in two schools was made on 10 December. A week later health authorities informed the principal of the two schools that the vaccination would start on the following day, but parental consent was not sought due to the short notice.

Five hundred and ninety-nine children were vaccinated at two primary schools of a commune in Ca Mau City. Within hours of vaccination, children from the first school showed adverse reactions. The school consisted of six classrooms, "with uncovered windows and doors opening into a central schoolyard" (p. 4528). The initial investigation of the episode started on 27 December (ten days after the vaccination), and the team "reached a consensus that the incident was due to MPI" (p. 4528) and proceeded with administering the second dose of the vaccine "in agreement with the parents' union" (p. 4528).

The investigation included interviewing health authorities regarding the transport and storage of the vaccine, the procedures involved in mass immunisation, and the measures taken following the incident. It also included a visual inspection of the school classrooms, library, grounds, and surrounding areas. Interviews were conducted with principal, teachers, and some students and parents who were available. Doctors were asked to describe patients' symptoms, treatment, and outcome. The remaining samples of the vaccine were tested. A "case" was defined

when a child was taken to hospital or health care facilities, reporting any symptoms within 24 hours following immunisation. All pupils had been discharged within a few hours.

The episode started with three 12 year-old boys, who developed trembling, nausea and headache one hour following vaccination. Symptoms in other children also included cold in the extremities. All pupils watched the affected children being moved to the library. Out of the 234 pupils who had received the vaccine at the first school, 97 (42 percent) were taken to hospital or health care centre. The proportion of females affected was 49/114, 43 percent, and the proportion of males was 48/120, 40 percent. Those affected had a mean age of 9.6 years, and those not affected had a mean age of 10 years (p. 4529).

At the second school, 365 pupils were vaccinated and did not show adverse reactions. When asked if they had any symptoms, 17/365, 5% raised their hands, but. "[w]hen asked to come to hospital, all 17 ran away" (p. 4529).

Flavouring was added to the vaccine in order to mask its unpleasant taste. Local news media and websites reported poisoning as a likely cause. Tests and examinations failed to identify any toxic agent. There was a suspicion that the vaccines contained active cholera, but no cholera symptoms, like diarrhoea or vomiting, were identified. Some parents believed their children had been poisoned. Attribution of the episode to the quality of the vaccine was ruled out; but the possibility of an unidentified toxic agent could not be completely excluded, as students were given a drink of water following the vaccine. Shortly after the vaccination, a period of school holidays

started, this prevented a proper follow-up and minimised contact with parents. Causes of symptoms were attributed to MPI. The authors acknowledged that parents will have to be notified in the future, and that changes in flavouring should be further investigated in relation to "safety and immunogenicity" (p. 4531).

5.5 Analysis and Findings

The four reports above, although completely different from each other, appear to be more or less convincing cases of mass hysteria. In the case of William Godfrey, symptoms of mass hysteria are represented by the impact of his alleged witchcraft on his neighbours: animals fell sick or died. Godfrey's devils also allegedly prevented his neighbours' wife to obtain butter from the churn; tormented his tenants by haunting the house; and killed a baby. Although this can be undoubtedly considered an episode of mass hysteria, it may have not been so 400 years ago.

The report on the event at Addis Ababa University indicates that the main symptom was fainting. Lack of details about the investigation excluding food poisoning as a cause may lead to a lower credibility of the event as a case of mass hysteria. On the other hand, fainting and concerns about the quality of food, along with air and water, seem to be typical of mass hysteria in the 20th and 21st centuries (Bartholomew & Wessely, 2002).

In the Coca-Cola incident in Belgium (Nemery, et al. 2002) the typical symptoms were similar to poisoning. However, except the incident in Bornem, which could not produce conclusive findings, all others seem to have ruled out toxic poisoning. The

negative results of several tests appear to lend it credibility as a genuine case of mass hysteria. plus the detailed accounts provided by researchers who declared no financial interest in the matter.

The episode in Ca Mau City is likely to have less credibility because the reporting was done by those involved in the vaccination programme, and this may increase the possibility of bias. The impossibility of analysis of the quality of the water given to the children following vaccination may also compromise the diagnosis of mass hysteria.

Analysis was done by coding of words and terms that could possibly refer to psychological variables, followed by a comparison to their meaning in psychological terminology, and by attempting to identify these variables in the reports. Then variables were compared between episodes, in order to confirm their presence. It was necessary to make a number of inferences, because of the impossibility of direct observation. The findings are reported below.

Stress

In case 1, it may be arguable that the harsh climate, as reported by Gaskill (1998), along with difficult relations caused by struggles over property, the economic and political instability, were sources of stress. It appears that the reputation of the Godfrey family were both a source and a result of stress. Looking back into an episode that took place about 400 years ago and trying to determine the presence of stress is hard to accomplish. Witchcraft is no longer a threat in our society, and most

causes of illnesses can be identified. When these causes can't be identified, health professionals usually elaborate a rational explanation for them, such as the case of fashionable diseases, discussed by Shorter (1992). It may be a challenge to find an accurate meaning for these stressors in the context of a witchcraft trial, because the episode precedes the current scientific thinking of our times.

Disputes over property in an environment of corruption and instability, the Black Death, the 'marsh-ague,' and the high levels of mortality may have been beyond the local people's ability to cope. Death and destruction by witchcraft may have been a threatening reality for many people, as suggested by Bever (2000), and they may have not had any resources to diminish their perceived vulnerability. Stress is classically understood in the context of stressors, coping ability and emotion (Lazarus, 1999). Perhaps the only effective coping strategies for the threat of destruction by witchcraft were the processes of formal accusations against suspects. This in turn generated further stress.

In case 2, stressors identified are: the death of two students by unknown causes, mid-year examinations, concerns about the quality of food, and the impact of administration conflicts on the students. The only coping behaviour reported was the gathering of students outside the president's office, perhaps in the hope of finding safety in numbers.

In case 3, it appears that the greatest source of stress was the information presented by the television news on the population, regarding the consumption of meat, dairy, and poultry products; this was further intensified by broadcasting the destruction of Coca-

Cola drinks along with images of dead chickens. The report does not indicate how people coped with the removal of these foods from the supermarkets. It is not know whether people were able to import these foods themselves, or whether food distributors, to keep up with the demand, adopted any measures. There is no reference to coping strategies adopted by the seventy-five children involved, apart from their symptoms. Nor there is reference regarding coping by the adults attended by the Poisoning Control Centre is available. Information broadcast by the media seemed to be the most relevant stressor; and broadcasting pictures of sick children being hospitalised by alleged poisoning from Coca-Cola may have made viewers who had drank Coca-Cola believe that they were also vulnerable to poisoning. Laboratory findings of traces of poison in the outside of the cans and bottles could have been another stressor broadcast by the media, even if the quantities were insignificant. In view of the emotional impact of death and sickness images presented to the viewers, it is unlikely that they perceived the significant detail that only one batch could have been contaminated, and that the levels of contamination were too low to cause mass poisoning. Another aspect that could have been dismissed by those affected was that batches, other than the ones sold in Bornem, were produced in different plants. This could also have limited their coping ability.

In case 4, the very urgent decision to vaccinate may have been a stressor, as the report indicates that urgency to vaccinate is commonly related to having identified a case of cholera in that population. The perceived urgency may have indicated that everyone was at risk of contracting cholera. Adding flavouring to the vaccine may have been a stressor, as well, and may have contributed to the parent's belief that their children had been poisoned. However, more details would be necessary to explore flavouring

as a factor. Local news media and websites broadcasting poisoning as a cause were a very likely stressor. Reporting of coping skills of children and parents is absent.

It appears that stressors abounded in all four cases.Their role still needs further investigation. A perceived inability to cope may have been the most significant stressor. In case 1, living next door to a witch, who was believed to do harm and kill may have allowed for only one coping strategy: make an allegation against the suspect. In case 2, there would not be many coping strategies available after hearing about the death by unknown causes of two other students, and the report does not indicate whether the students had an alternative to eating the food provided by the university. Similarly, in case 3, after being flooded with food and drink poisoning scares, and having drunk Coca-Cola themselves, the population may have perceived that virtually all food could have been contaminated. The report does not indicate how people coped in those circumstances. Vaccinated children in case 4 were not offered the right to say "no" to vaccine, their parents were not involved in decision-making.

What most reports seem to neglect are the possible actions that ordinary people took in order to resolve their problem. It is likely that those involved did not have the necessary coping skills to avoid becoming affected by mass hysteria. And this may be what might distinguish those who become "victims" from the ones who do not. Folkman and Lazarus (1982) indicate that those who are more likely to become involved in mass hysteria disclose more dissatisfaction at work, lower income, more problems with supervisors, and more personal problems at home. Considering that many other employees are likely to be subject to the same stresses, it is likely that the

coping skills are less developed in those involved. This could be applicable to mass hysteria in other environments.

Anxiety and fear

Although there was no direct measurement of anxiety and fear, it appears that they were present in all cases. In case 1, it appears that the population had little control over their fate. They lived in the marsh infested by disease, and had been plagued by the Black Death. Economic and political problems may also have increased their anxiety. The publication of the treatise on witchcraft by a clergyman may have given its contents an authoritative nature, and confirmed witchcraft as a tangible risk. In case 2, the unknown cause of death of two students, along with fear of food poisoning may have increased their anxiety and fear of death. In case 3, the news media seem to have present several death primes (dead chicken, destruction of cans, children being hospitalised, haemolysis by intoxication). In case 4, it appears that cholera itself was a reminder of death, and may have triggered the processes of fear and anxiety. The uncertainty about the quality of the water given to the children may also have been a contributor.

All cases appear to be abundant with death primes and reminders of death in several forms. It is likely that in Case 1, the inability to attend church services because of the rise of Protestantism and the proliferation of several separatist groups may also have played their part in creating anxiety and fear. The media played a relevant role in cases 2, 3, and 4.

Leadership

In case 1, it appears that authorities followed culturally endorsed legal procedures. Allegations took the form of written testimony and were presented to the secular authorities. According to Gaskill (1998) witchcraft allegations were one of many ways of dealing with conflict resolution. Villagers may have depended on authorities to resolve conflicts involving the Devil, a supernatural entity. The most important authorities concerning the solution of the episode were the jurors who, despite five thousand pages of testimony, dismissed the case. Further investigation about the identity of the jurors, their relation to Godfrey, their community and other authorities, and their beliefs about witchcraft would be most enlightening for the understanding their role in the episode.

In case 2, according to students report to the newspaper, the authorities played a major role in creating conflict between the student body and teachers, which may have contributed to the fainting episodes. This may indicate an absence of intra and interpersonal skills among those appointed to manage the university. Other authorities may also have helped spread the panic by conducting a search for fainted students in the university compound. Despite the search being an apparent common sense response, it may have helped spread the belief that a serious problem was happening at the university. The ones who were in charge of communicating laboratory test results and *post-mortem* results may have been considered authorities. It appears that informing the students that the negative test results for food contamination were not an effective strategy, because two other students fainted in the following day. Besides that, they boycotted breakfast and possibly lunch. Authorities who decided to uphold

post-mortem results may also have contributed to the panic. Food management authorities are not mentioned in the report. Planning, co-ordination and the ability to overview activities appears absent among the authorities involved in the outbreak. The role of the Minister of Education and others who helped take the affected to the hospital may have contributed to intensifying fears. Taking the affected students to hospital may have helped confirm the belief that they were indeed sick. It is not reported whether the university had health care facilities or not, or whether a doctor was available locally. The Minister of Education provided emotional support to the affected, however, details are missing, except for the reference to her story-telling as an ex-student of the university.

In case 3, it appears that the newsmedia were the authorities that most contributed to the outbreaks, by presenting primes of death combining pictures of dead chicken with Coca-Cola drinks, by reporting cases of haemolysis when there was none, and by showing affected children being taken to hospital. Previous dissatisfaction with governmental decisions regarding food processing and manufacturing may indicate the absence of various leadership skills of the Ministers of Health and Agriculture. Being forced to resign, they may have contributed to the episode, by suggesting to the masses that the ones in control of health in Belgium were performing their jobs below the expectations. There are no details regarding who replaced them and how the public perceived the new ministers, whether they were appointed or elected. This may have also influenced the impact of test results, by possibly being discrediting the source.

Teachers in the Bornem episode seem to have contributed to the outbreak by endorsing that the drinks caused illness, by having gone around the classrooms asking if anybody else who drank Coca-Cola was feeling sick. Scientists who declared to the media that minimal amounts of chemical could harm health, may have greatly contributed to maintaining the outbreak, especially if the type of chemicals they referred to was related to the chemicals allegedly found in the drinks and on the outside of the cans. It is likely that independent laboratories would have been an authority contributing to ending the outbreak. However, they may have been dependent on the media to inform such a large number of people. On the other hand, the media appeared to have been interested in communicating fears rather than facts. The most effective solution for the outbreak may have been the change in packaging and the extensive apologies by the Coca-Cola Company. By doing so, they may have reassured the public that the problem had been solved, and that they had eliminated all risks. This may indicate interpersonal skills, ability to overview business activities, plan and make decisions under pressure.

Removing all Coca-Cola products form the market and forbidding their sale may have also contributed to maintaining the panic, by reaffirming the belief that they were indeed contaminated. Perhaps the only decision made by authorities that effectively contributed to ending the outbreak was the creation of new packaging for the Coca-Cola products.

Case 4 seems to be flooded with inappropriate decisions made by authorities, which were captured by the newsmedia and presented to the public as an episode of poisoning. Many cultural variables may have influenced to the episode. In many

countries, it would have been impossible to vaccinate children without parental consent. Not all countries have parents' union. The report writer could have been a speaker of English as a second language, and it is not know if "parents union" is a synonym for parents association. The vaccination programme itself seems to have serious management problems, which were often reflected by authorities' problems with communicating information (interpersonal skills), plan, overview a project or business, and motivate people. There is no reference to whether each vaccine depends on a case to be produced, nor is discussed the reason for vaccinating only after a case of cholera is identified. It is likely that the dependence on identifying a case to start vaccination may cause more panic than if the programme took place regularly, independent of case identification.

If the vaccine was planned to start on 18 December, this plan was not shared with all involved. Informing the principal 1 day before the vaccination started may not have allowed him or her to make the necessary preparations in support of the programme, obtain parental consent, and make sure that all children were present. However, the absence of involvement of the principal seems to have contributed to scepticism about the safety of the vaccine. This may also demonstrate that the ability to lead and motivate the participation in the vaccination programme was absent among the co-ordinators of the vaccination programme. The period of school holidays may have been foreseeable and including it in the vaccination plan may have aided in the investigation of the outbreak, this may also indicate planning difficulties by the authorities responsible for the vaccination programme. According to Clements (2003), mass hysteria is a common response to mass vaccination.

Teachers may also have contributed to the outbreak by accidentally exposing sick children to non-sick children, spreading the belief that the vaccine was harmful. Again, vaccination authorities could have avoid this exposure by better planning the vaccination. No information was provided regarding the change in flavouring of the vaccine; this may also have helped create suspicion that the vaccine contained poison or live bacteria. The media may have been perceived as an unquestionable authority reporting that the vaccine contained toxic agents.

Social Exclusion

Disputes over property were likely to have involved a large degree of social exclusion. If disputes were not resolved by satisfying the disputing parties equally, it is possible that the ones who felt less benefited were those more likely to feel excluded from the decision-making processes. Disputes in the seventeenth century may have lacked the sophistication of modern disputes processes, sometimes mediated by courts of laws, which aim to a fair conflict resolution. Besides that, corruption and the increase of number of poor people in New Romney in 1617 may be also related to social exclusion, if it implies unequal and unfair distribution of wealth.

If social exclusion can be measured by the absence of involvement in decision-making, then both cases 2 and 4 indicate social exclusion. In case 2, students were dissatisfied with administrative changes and food quality. In case 4, parental consent to vaccinate was ignored, researchers acknowledged the need to obtain parental consent in future mass vaccinations after the episode. Cases 2 and 4 seem to have presented another form of social exclusion: intervention in the university by new

administrative staff, and by health professionals respectively, without community participation. It is likely that involving all those concerned in decision-making could have reduced the probability of an outbreak, because this would have allowed both students and parents voice their concerns, as well as allowed management teams to minimise risks of stress, anxiety and fear by educating the population about their intervention. In case 3, the authors acknowledge that one of the factors involved in risk perception was the rage against failing authorities and against modern practices of food processing. This may indicate that the population may have been left out of decision-making about government policies about monitoring of health hazards, as well as regarding the decisions in implementing food manufacturing and processing practices.

Mimicry and Emotional Contagion

In this analysis I considered mimicry as a non-conscious aspect of emotional contagion, as proposed by Caccioppo (1992). It can be a highly complex task to apply a contemporary definition to a case (1) that is 300 hundred years old. The accused was well-known in his village, and it is likely that emotional contagion may have happened during contact between the villagers. The conditions and values that determined contagion may be inaccessible to us. The accused may have had several contacts with several people, in view of his social and political position, but is unlikely that all of those who were aware of the allegations were affected by them. Interactions between Godfrey's neighbours and Godfrey's tenants may have started the contagion process. Based on the records, perhaps the only certainty is that this contagion originated from interactions between the afflicted people, possibly

combined with observation of the behaviour of the accused, who may have supported the contagion because of his bad reputation. Perhaps a deeper analysis of the social position of each of the involved might produce a better understanding of how contagion influenced or not others.

In case 2, emotional contagion was clear, discussing the situation with other students seems to have been enough to trigger fainting. Emotional contagion in Cases 3 and 4 may have been mediated by the news media and news website, especially with photos and televised coverage of children becoming sick. On a special note, it appears that fainting is a common response in cases of vaccination, either individually or in groups; some may faint because, besides the possibility of MPI in groups, they may scared of needles; others may faint because of an adverse reaction to the vaccine. Clements (2003), recommends appropriate surveillance systems, because in these cases, an incorrect diagnosis could risk a person's life.

Suggestibility

In case 1, the publication of the treatise was probably the most identifiable source of suggestion. However, the historian indicates that the accused could not read, and at least two of the accusers may have never heard of the treatise. Although the treatise may have been a powerful source of suggestion, a link between its publication and the outbreak remains to be explained. Other sources of suggestion may have originated from interactions among neighbours. It appears that fainting worked as direct suggestion to those witnessing it in case 2. Search for students who could have fainted in the university compound may have worked as a suggestion that all students

were at risk. The media presented direct suggestions of poisoning to the population in cases 3 and 4. Direct suggestions also were made by the teachers who went around the classrooms asking if anyone who had drunken Coca-Cola was feeling unwell in case 3. It is likely that the intervention of medical personnel may have been a source of suggestion, as well. The transport of children to hospital under media coverage may have worked as a powerful suggestion in case 3. There may have been several other sources of suggestion, not recorded in the reports. Suggestibility, thus, seems to have been present in all cases.

Gender differences

In case 1, the accused was a male, and his accusers were both males and females. In case 2 all those involved were male; in case 3 the majority were girls, and in case 4 the proportion of males involved was similar to that of females. Although females have been predominant in most reports of mass hysteria, both females and males can be involved, and to date there is no gender theory that can account for the involvement of both genders in these outbreaks. The most surprising finding is the absence of reports of male-only mass hysteria in scholarly journals.

5.6 Conclusions

Stressors were present in all episodes, however, there is usually no reference to coping skills, making it impossible to establish control groups, that is, those who were subject to the same pressures but did not display any symptoms. It is very likely that

those involved in mass hysteria have less coping skills as, according to Folkman and Lazarus (1982) they are likely to report more stress than those who are not involved.

With regards of anxiety and fear, it appears that the most significant variable was the fear of death, and in all cases reminders of death were present. Solomon, Greenberg, and Pyszczynski (1998) argue that the awareness of death plays a significant role in human affairs. The possible inability to assess danger accurately may have been due to several factors, including suggestion, contagion, and the presentation of incorrect information by the media. This may also have increased the levels of anxiety.

Suggestibility, mimicry and emotional contagion seem to work in partnership in these episodes. However, a more detailed analysis is required to understand these links. It appears that suggestibility was present in all cases, but the sources of suggestion were in case 1 were not clear.

Social exclusion was also present in all cases. Zeldin and MacNeil (2006) suggest that including others in decision making not only allow for the reduction of conflict but also contributes to an atmosphere of inclusiveness and co-operation. In all the cases, there was no indication of co-operation between the involved and their community. In case 1, it is likely that economic pressures and social conflict, especially regarding property, were likely to determine social exclusion.

Considering gender, it appears that both males and females can be involved in mass hysteria. It may be necessary to investigate socio-political and economic aspects that could explain the absence of male-only mass hysteria reports in scholarly journals.

This could be a significant step forward in the study of mass hysteria from the perspective of gender.

6.0 General Discussion

Despite its controversial nature, mass hysteria can involve many people who find themselves in social gatherings, and have some kind of acquaintance with others. It is probably one of the less desirable experiences for a community leader or workplace supervisor, as well as for the involved individuals, who are automatically accused of being hysterical. Despite knowing little about the number of affected individuals and its incidence (Ryan & Morrow, 1992), each reported episode seems to be substantial enough to mobilise emergency personnel, disrupt routines, and cause considerable financial losses.

Mass hysteria is a sociological phenomenon, and not included in the training of physicians (Jones, 2000). However, outbreaks require their involvement in the care of the affected people. If they are unaware of the possibility of collective illness without an organic cause, confusion among emergency care and management teams is likely to occur. Thus the label "mass hysteria" is likely to be used as a form of blaming the affected people. Recognising the problem as emotional in nature, as suggested by Balaratnasingam and Janca (2006) should be of great help in managing the problem.

Some may benefit from the use of the term mass hysteria to rename episodes of rebellion, as an attempt to discredit the claims of the rebellious people (Mahone, 2006). Mass hysteria in the workplace can raise scepticism, in view of the potential danger of using the term to label occupational illnesses with an organic cause, to escape or avoid responsibilities for promoting healthy work environments. Others might use the term incorrectly because they can't tell the difference. Despite the

proposal of taxonomies by Bartholomew (2001; 2004) and Wessely (1987), it remains largely controversial, and as an object of scientific enquiry it seems to be named, renamed, and reclassified according to the researcher's will or political agenda. For example, this may be the case with feminist writers.

Despite the contrary opinion of some authors, such as Showalter (2002), it is likely that every episode of mass hysteria has a connection with a moral panic. Fear of poisoning, for instance, seems to be a recurring *motif* in moral panics. During the Black Death, several Jewish communities were destroyed and Jewish men were tortured and made to confess that they poisoned wells and this allegedly had brought about the Black Death (Ritzmann, 1998). Episodes motivated by fear of poisoning are also a common feature in the 20th and 21st centuries. It appears that a requirement for its occurrence is the accidental or intentional invention of threat, passed on to the masses as a real risk, such as the mad gasser of Mattoon. Further investigation of the possible link between mass hysteria and moral panics may help clarify further the role of psychological variables, by identifying connections between agents and the affected people in episodes of mass hysteria.

Mass hysteria seems to have attracted the attention of few researchers in psychology. However, apart from successfully isolating some variables, verifying their impact during laboratory conditions (Lindberg, 2002; Lorber et al., 2007), other studies seem flooded with methodological issues, leaving little room for hypothesis testing. In this regard, the use of qualitative and quantitative methods in a complementary fashion - if one can treat them both as important in the study of psychological phenomena as suggested by Michell (2006) - may provide a solution to minimising methodological

limitations. Data collection seems crucial, especially for case studies, which may require data analysis to infer correlations.

Psychological variables are present in episodes of mass hysteria in the form of behaviours, cognitive processes, and emotions. Besides the need to further study the prevalence of these variables, several other variables remain to be studied, especially traits, like neuroticism, which has been positively correlated with mass hysteria by Huang et al. (2005). Psychological syndromes, such as depression, may play a relevant role as well, and studies on depression in connection with outbreaks remain to be investigated. Regarding gender, both males and females appear to be susceptible to mass hysteria. The most notable finding was the absence of detailed reports in scholarly involving males only. This may be due to gender bias, because most writers argue that females are predominant in episodes of mass hysteria.

Despite limitations imposed by methodology, it appears that leaders and their leadership skills play a key role in mass hysteria, particularly in the context of moral panics.

In order to minimise bias, I utilised compilations of historical data from reputable historians, such as Robert Rapley (1998), and Michel de Certeau (2000). However, future analysis of behaviour utilising the historical method is likely to increase accuracy if based on original records, rather than compilations.

It was possible to demonstrate that behaviour laws are applicable to episodes of mass hysteria, as the behaviour of the affected people seems to be ruled by its

consequences. Future research involving baseline recording and control groups would be most valuable for understanding the phenomena. If this can not be done in natural settings because of absence of data, a computer simulation of episodes is likely to make up for the lack, at least partially.

Specific training of emergency care teams, especially in their interactions with the affected people, besides the recording of episodes would be most helpful to generating scientific knowledge. Besides the inclusion of mass hysteria as a topic for medical training, it would be most valuable if expert psychological service were available to aid in community prevention, emergency care and crisis management. With their privileged background of knowledge of behaviour, cognitive processes and emotion, psychologists could certainly aid in preventing and reducing the duration of episodes by identifying psychological factors that are often diagnosed by exclusion.

One aspect that tends to be neglected in the history of mass hysteria is that, as science progresses, labels of mass hysteria are removed from some episodes, because physical causal agents are identified. This appears to have been the case with Legionnaires disease (Chang &Gershwin, 2005). Although in some cases a subtle causal agent may never be identified, future discoveries of this nature may contribute to understanding the role of psychological factors in mass hysteria.

This was an exploratory study of psychological variables in episodes of mass hysteria, and the amount of information gathered and analysed raised more questions than answers.

In view of the complexity and uniqueness of each episode of mass hysteria, numerous suggestions can be made for further research. However, limitations abound. Ethical issues may restrain the replication of episodes; the urgency of restoring the routine and absence of training for medical personnel may not allow for proper recording of the episodes. Until these limitations are overcome and allow for the study of mass hysteria in natural settings, researchers could use computer technology for simulating episodes. Computer technology could be of great aid in studying mass hysteria in its natural occurrence.

Table 1: A summary of mass hysteria episodes discussed in this thesis

Source	Number of Affected People	Environment	Alleged Symptoms	Duration	Year	How it ended
Bartholomew, 2005	57, mostly females	Melbourne Airport, Australia	fainting, vomiting	1 day	2005	Test results failed to identify toxic agents. Alleged victims taken to hospital
Bugge, 2006	300 children	14 schools, Portugal	rashes, dizziness, breathing difficulties	not specified	2006	not specified
Ceschia and Cozzi, 1989	adult females	Verzegnis, Italy	mass diabolical possession, behaviour not specified	Approx 1year	1878-1879	Removal and hospitalisation of the affected
Chen et al., 2003	48 adolescent females	school, Taiwan	breathing and swallowing difficulties, dizziness, fainting, "verbal outbursts" (p. 12)	1 week	2000	Hospitalisation, reassurance, administration of sedatives
Coligan and Stockton, 1978	124 females	Garment manufacturing plant, southeastern USA	headache, burning eyes, nausea, weakeness, and breathing difficulty	Approx. 1 month	1974	Diagnosis of mass psychogenic illness

Table 1: A summary of mass hysteria episodes discussed in this thesis (contd.)

Source	Number of Affected People	Environment	Alleged Symptoms	Duration	Year	How it ended
de Certeau, 2000; Rapely, 1998	at least 8 nuns, several convent boarders and a few women in the community, all females	The Convent of St Ursula, Loudun, France	histrionics, speaking in tongues, prophecising the future, vomiting, swearing, inflicting self-harm, locating absent persons, convulsions and contortions	2 years	1632	Witchcraft trial, a guilty sentence, and the burning of Urbain Grandier, accused of bewitching the nuns.
Dhadphale and Shaikh, 1983	126, mostly girls	secondary boarding school	uncontrolled laughter, twitching	4 days	1976	Isolating the affected students, sending them home, and closing the school.
Gaskill, 1998	at least five people	New Romney, Kent, England	tormenting by Godfrey's devils, including the kidnapping of a newborn, impaired growth and death of animals, death of a baby	Approx. 1year	1617	The judges threw out the case, Godfrey took action against the first accuser in 1618
Gupta et al. 2001	58 secondary school girls	school in Haryana, northern India	nausea, vomiting, headache, restlessness and fits	less than 1 day	2001	Tests confirmed quality of the vaccine, reassurance counselling

Table 1: A summary of mass hysteria episodes discussed in this thesis (contd.)

Source	Number of Affected People	Environment	Alleged Symptoms	Duration	Year	How it ended
Hood, 2001	at least 60 parents and their pre-school children	Christchurch Civic Creche, Christchurch, New Zealand	fear of the dark, enuresis, dislike of own genitals, challenging behaviour, sexualised behaviour	18 months from the first allegation to the end of the trial of the accused teacher	1991	Closure of the creche, accused teacher sentenced to 10 years in jail.
House and Holness, 1997	208, mostly females	fish packing plant	irritation of eyes and throat, chest tightness, headaches, weakness, dizziness, laughing and crying	2 1/2 months	1992	Reassurance that there was no danger. Intervention by occupational health professionals, who diagnosed mass hysteria and made recommendations accordingly.
Jacobs, 1965	between 8 and 30, mostly children	Taipei, Taiwan	cut on the arm, the back of the hands, legs, chin, and one death by castration by a mysterious, never seen slasher.	1-3 months	1956	Police investigations indicated that most cuts were accidentally or deliberately self-inflicted inflicted

Table 1: A summary of mass hysteria episodes discussed in this thesis (contd.)

Source	Number of Affected People	Environment	Alleged Symptoms	Duration	Year	How it ended
Khiem et al., 2003	97 children, boys and girls, mean age 9.6 years	Ca Mau City,Vietnam	trembling, nausea, headaches, cold extremities	Less than 1 day	2001	Tests produced negative results
Ladendorf & Bartholomew, 2002	over 36 "victims"	City of Mattoon, Illinois	paralysis, upset stomach	2 weeks	1944	Analysis of evidence failed to substantiate claims.
Lifton, 2000; Pangi, 2002; Taneda, 2005	Hundreds in Matsumoto, thousands in Tokyo	Matsumoto and Tokyo, Japan	poisoning, post-traumatic stress disorder	months	1994-1995	Imprisonment of the leader of the cult, and nine of his followers
Nemery et al., 2002	over 900	Belgium and neighbouring countries	abdominal discomfort, headache, diarrhoea, nausea, malaise, respiratory problems, trembling and dizziness	2 weeks	1999	Reassurance that there was no poisoning in the Coca-Cola drinks, re-design of the products' with packaging with green lids and caps.
Norman, 1945	thousands, males and females	Nishinomiya, Japan	frenetic dance	Not specified	1867	Not specified

Table 1: A summary of mass hysteria episodes discussed in this thesis (contd.)

Source	Number of Affected People	Environment	Alleged Symptoms	Duration	Year	How it ended
Ong, 1982;1987;1988	not specified, mostly females	Several manufacturing plants, Malaysia	spirit possession: screaming, struggling with supervisors; ghost sighting	approx. 1decade	1969	Removing the affected from the factory floor, sedating the affected women intervention of faith healer
Philen et al., 1989	339 students, aged 5 to 14 years old	school, Atlanta, Georgia	headache	2 months	1988	Environmental and epidemiological testing disconfirmed beliefs in toxic poisoning
Reid and Reynolds, 1990	thousands of workers	Several industries, Australia	disabling hand, arm, shoulder and neck pain, numbness, parathesisa, headaches	at least 2 years	1984-1986	not specified
Shakya, 2005	70 girls	Rural secondary school, Eastern Nepal	spirit possession: making strange noises,laughter, clenching teeth, tightening fists	not specified, average of 4 cases per month	not specified	Isolating the affected students, cutting down secondary gains
Sluhovsky, 2002	monks, numbers not specified	Dominican monasteries in Paris and Bologna	"attack by evil spirits" (p. 1405), behaviour not specified	Not specified	1400-1450	procession of the *Salve Regina*

Table 1: A summary of mass hysteria episodes discussed in this thesis (contd.)

Source	Number of Affected People	Environment	Alleged Symptoms	Duration	Year	How it ended
Sluhovsky, 2002	2 Capuchin novices (males)	Capuchin monastery, Caltassineta, Sicily	tormented by evil spirits, *obsessio and possessio* syndromes, behaviour not specified	Not specified	1671	not specified
Small, Randolph and Eth,1991	247, mostly girls	Public auditorium, Santa Monica, California	abdominal pain, headache, weakness, dizziness, nausea	not specified	1989	Cancellation of the show, removal of the affected from the area., hospitalisation
Stahl and Lebedun, 1974	10 females	data processing center, Purdue, Indiana	dizziness, nausea, vomiting, fainting	3 days	1972	Symptoms were attributed to "atmospheric inversion" (p.44)
The Daily Monitor, 2003; Addis Tribune, 2003	30 male students	Addis Ababa University, Ethiopia	mass fainting	less than 1 week	2003	Taking the affected to hospital, provision of reassurance by authorities
The Economist, 2006	not specified	school, Chechnya, Russia	convulsions, nausea and breathing difficulties	not specified	2005	not specified

Table 1: A summary of mass hysteria episodes discussed in this thesis (contd.)

Source	Number of Affected People	Environment	Alleged Symptoms	Duration	Year	How it ended
Tseng, 1988	over 2000, mostly males	Guangdong, China	sensation of genital retraction,followed by accidental self-inficted harm attempting "rescue"	several months	1984-1985, 1987	Intervention of faith healers
van Ommeren et al., 2001	153 children, mostly girls	refugee camp, Bhutan, southeastern Nepal	fainting or dizziness, a	Not specified (Happened during the Summer of 1997, p. 1260)	1997	Intervention of faith healers
Verma and Srivastava, 2003	397, mostly males	Ghaziabad and East Delhi, India	bruises and abrasions	16 days	2001	The media reported that the "monkey man" was a myth.
Webster, 2005	at least 10 thousand children between 1998-2004	Child care homes, England and Wales	"disturbed behaviour (p.159), "denial" that abuse had occurred (p.227), psychological damage (p. 449), female's "subordination" (p. 570)	several years	1986-2004	Possibly still ongoning; in the case of North Wales, episodes ended with legal proceedings culminating in guilty or innocent verdicts for the accused.

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