

# Changes in liking as a means of reducing cognitive discrepancies between self-esteem and aggression<sup>1</sup>

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Festinger's theory of cognitive dissonance (1957) states that two cognitions are in a dissonant relation if, considering these two alone, they are psychologically inconsistent or contradictory. The existence of dissonance motivates the individual to reduce dissonance by engaging in cognitive changes, behavior changes, etc. This theory has led to a considerable amount of research on the consequences of behaving in ways which are discrepant with prior beliefs (e.g., Cohen, Brehm, & Fleming, 1958, Festinger & Carlsmith, 1959, Cohen, Terry, & Jones, 1959, Brock & Buss, 1962). Recently, Bramel (1962, 1963) has shown the relevance of dissonance theory to the relation between self-esteem and defensive projection, an area usually considered to be within the province of personality theory. He found that when an individual is exposed to information both unfavorable to himself and dissonant with his self-image, he tends to attribute the undesirable characteristic to other people, i.e., he tends to "project." If the same unfavorable information is consonant with his self-image (i.e., if the individual has a negative self-image), little if any projection occurs. Thus projection may be viewed as a consequence of the desire to reduce discrepancies produced by information that is incompatible with a need for a favorable self-evaluation.

If one follows Bramel's line of reasoning, other processes traditionally viewed to be within the domain of personality theory may be made amenable to a dissonance formulation. For example,

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increased dislike of the victim of an aggression has often been observed where a person injures another whom he does not necessarily want to hurt (Davis & Jones, 1960, Buss, 1961, Berkowitz, 1962) Given this "inappropriate aggression," the aggressor may be expected to experience dissonance The higher his self-esteem the more would the aggression arouse dissonance, since his behavior is more discrepant with his self-image the more self-esteem he possesses If the aggressor is led to believe that he has a preponderance of unfavorable characteristics (low self-esteem), the act of injuring another is consonant with his belief that he is an unpleasant person, or at the very least is less discrepant with his self-image than when he perceives himself as having predominantly favorable traits The lower his self-esteem the less dissonance would be aroused by the act of aggression.

The arousal of dissonance will motivate the aggressor to reduce dissonance as, for example, by increasing his dislike of the other person, thereby making his perception of the other consistent with his behavior The higher his self-esteem, the more he will dislike the other person after aggressing against him Where the aggressor views himself in derogatory terms, the act of aggression will produce minimal dissonance and thus little increase in dislike of the victim of the attack

The possibility exists that the aggressor, whether of high or low self-esteem, will not feel responsible for his behavior because he perceives his aggression to be a consequence of situational pressures or coercion (e.g., Milgram, 1963) A number of recent studies (Brehm & Cohen, 1959, Davis & Jones, 1960, Brock & Buss, 1962) have shown that if the person has no alternative except to behave in a manner discrepant with his beliefs and values, little if any dissonance is created If, on the other hand, he experiences the possibility of behaving in a manner consonant with his beliefs but still acts in a discrepant manner, relatively great dissonance is created Findings of this kind have led a number of theorists (e.g., Brehm & Cohen, 1962) to suggest that choosing to engage in the discrepant behavior may be a necessary condition for arousal of dissonance.

The present experiment is both an extension of the preceding considerations on self-esteem into the domain of aggression and a further test of the importance of "choice" in arousing cognitive

dissonance It examines the effects of inducing aggressive behavior in an individual who is opposed to such aggression, and under conditions where he has a choice of withdrawing from the experiment so that he does not have to perform the aggressive act If the individual makes such a choice, the higher his self-esteem the greater the dissonance, since the act of injuring another is dissonant not only with his opposition to aggression but also with his self-image The aggressor may attempt to reduce dissonance by increasing his dislike of or unfriendliness toward the other person<sup>3</sup> If the aggressor perceives the other person in unpleasant terms, then the knowledge that he has aggressed against him would not be inconsistent with his self-image The higher his self-esteem, the greater the increased unfriendliness toward the other person

To give an overview of the experiment, Ss were given the option of refusing (Choice) or were directed (No Choice) to administer a series of seemingly painful electric shocks to another person, a confederate of the experimenter (E) All Ss were on record as opposed to the use of electric shock on humans for scientific purposes Half of the Ss had previously received falsified psychological test results aimed at increasing their level of self-esteem (High Self-Esteem), the remaining half had received comparable information designed to lower their self-esteem (Low Self-Esteem) In line with the reasoning presented above, the major hypothesis was Since dissonance will be greatest where an S who believes he has high self-esteem chooses to carry out an aggression which he opposes, S will become more unfriendly toward the person he attacks under the Choice, High Self-Esteem condition than under the Choice, Low Self-Esteem condition where dissonance will be minimal Dissonance arousal is not expected in the No Choice conditions and therefore no changes in friendliness should appear

<sup>3</sup>It is recognized that the aggressor might also attempt to reduce dissonance by lowering his self-esteem However, it is assumed that in general strong barriers to self-derogation exist, and that in the absence of explicit influence pressures, increased dislike of self as a mode of dissonance reduction is less likely to occur than increased dislike of the other person

## METHOD

*Subjects*

Ss were 60 male volunteers recruited from introductory sociology classes at Ohio State University. Seventy Ss were actually used, but deletions occurred during the experiment and it was decided to continue collecting data until there were 15 usable cases in each condition.<sup>4</sup> All Ss were part of a larger sample that had received a questionnaire asking, "How strongly do you favor or oppose the use of electric shock on humans for scientific purposes?" The accompanying scale had 51 points with each tenth point labeled as follows: "Extremely Opposed," "Somewhat Opposed," "Slightly Opposed," "Slightly In Favor," "Somewhat In Favor," and "Extremely In Favor." This questionnaire was administered by the sociology instructors and every precaution was taken to prevent Ss from associating *E* with the questionnaire. Those Ss who reported being "somewhat opposed" or "extremely opposed" to the use of shock were included in the study, and were then assigned to one of the four experimental conditions on a random basis.

*Procedure*

Approximately two weeks before the experimental session, *E* appeared in Ss' classes and administered a series of psychological tests "designed to discover something about the personality and intelligence of college students." The tests included the Crowne-Marlowe social desirability scale (1960), a card from the Rorschach series, a shortened version of the Otis Self-Administering Test of Mental Ability, and an adjective checklist self-esteem measure. Ss were told that these tests would be confidentially analyzed by three senior members of the Psychological Clinic as part of a nation-wide study being conducted by the Clinic. Ss were further informed that they could learn their results in a later interview, at which time they would take additional tests aimed at measuring their self-insight, their ability to form impressions, and related characteristics.

*Manipulating Self-Esteem* At the beginning of the experimental session, *S* was interviewed regarding his results on the previously administered personality and intelligence tests. Unknown to *S* the results he received had no reference to his actual test performance. Only two test reports were used, one favorable and the other unfavorable. The reports were very similar to those used by Bramel.

<sup>4</sup> Ten Ss were excluded from the analysis for the following reasons: Five were suspicious that the confederate was not as presented, three did not believe they actually administered shock to the confederate, and two refused to administer shock when given the option of refusing. Suspicious Ss were about evenly distributed across the four conditions, but the two Ss who refused to administer shock were both from the Choice, Low Self-Esteem condition.

(1960), and covered the following areas of personality and intellectual functioning (1) general level of personality maturity, (2) mental alertness and intelligence, (3) concern for the feelings of others, and (4) egocentricity. Each section of the report discussed at length the test results bearing on a particular area, the tone of the report being consistently favorable or consistently unfavorable. Both reports were essentially the same but the contents were opposite in intent, one being designed to lower S's self-esteem (unfavorable report), and the other to raise it (favorable report). A sample section from each report follows. First, the section on "general level of personality maturity" in the favorable report:

This person shows a high degree of personality maturity, signified by a successful integration on the various levels of functioning. He reveals himself to be well-equipped for a productive and conflict-free adjustment to most environmental circumstances. In almost every respect, he presents a well-balanced and effective personality pattern, considerate and sympathetic, intellectually alert and flexible, and excellently qualified for a successful leadership role. He stands above the average and presents one of the more favorable personality structures that has been analyzed by this staff.

The corresponding section in the unfavorable report was as follows:

In general this person shows a low degree of personality maturity, signified by a failure to arrive at a really satisfactory integration of motivations on the conscious and unconscious levels. The pattern of his responses is generally poor indicating a weak personality, with evidence of inconsiderateness, lack of intellectual alertness and flexibility, and a lack of capability for successful leadership. He stands below the average and presents one of the more unfavorable personality structures that has been analyzed by this staff.

After being assigned to his experimental condition (i.e., High or Low Self-Esteem), a given S was read the report by E, the reading and discussion taking in all about 20 minutes. Following this, S was informed that he would now take several tests which would assess additional aspects of his personality and intelligence. S then rated himself on 16 polar adjective 7-point scales, a measure designed to determine the effectiveness of the self-esteem manipulations. An over-all favorability score was computed across the scales. Examples of the adjectives were mature-immature, intelligent-unintelligent, and considerate-thoughtless.

*Introducing the Confederate* When S completed his self-ratings, E left the room and returned with an experimental accomplice, who was introduced as another student waiting to take part in the study. E then explained that "the next test is concerned with how people make judgments of one another on the basis of first impressions," and that S and the confederate would therefore be required to make some personality judgments about each other. To aid them in forming their impressions E suggested they should become better acquainted, and that one way to do this would be for the confederate to administer some simple tests to S.<sup>5</sup> Two tests were suggested: a picture completion test and a task in which S had to count backwards from 99 to 1 by two's as quickly as possible. E pointed out that S's responses would not be scored and that the whole procedure was designed only to help S and the other student "get acquainted with each other." E then quickly explained the method of administering the tests and told the two to begin. In administering the tests, the confederate consistently maintained a friendly attitude, although his remarks were restricted to the tests themselves and a final comment of "very good" when S completed both tests.

Upon completion of the tests, E asked them to fill out questionnaires which measured their feelings of friendliness toward one another. The questionnaire purported to assess the ability to make personality judgments on the basis of first impressions. A total friendliness score was computed based on S's responses to the three intercorrelated items in the questionnaire (Berkowitz, 1960). The items asked (1) "Would you admit Mr. — (name of the confederate was written in here) into your circle of close friends?", (2) "Would you like to participate in another study with Mr. —?", (3) "Would you like Mr. — as a roommate?" Each item was accompanied by a 7-point scale where 1 = "Definitely Yes" and 7 = "Definitely No." S's score was the sum of the scale points he checked for each item, this constituting the "before" measure of S's friendliness toward the confederate. Throughout this paper our working assumption is that the unfriendliness responses are indicative of dislike.

*Shock Instructions* The technique by which S administered shock was a modified version of the "aggression machine" described fully by Buss (1961). The idea is for S to act as an experimenter in a concept formation task and to administer electric shock to another student (the confederate) whenever the latter makes an incorrect response.

<sup>5</sup> This method was selected for getting S and the confederate acquainted because of considerations of comparability with a second experiment in which the confederate insults S in the course of administering the tests. Although the method used here may have been somewhat less than "cognitively real" for S, it aroused no particular suspicions and seemed to have the desired effect.

We turn now to the details of this procedure as used in the present experiment

Immediately following the "friendliness" questionnaire, S and the confederate were told that the next test was designed to study the ability to learn concepts, "more specifically, what effects the personality of the experimenter has on conceptual learning" E further explained that one of them would act as the experimenter and the other as the subject E paused a moment, looked at the confederate and said "Why don't you serve as the subject, and Mr (Subject) as the experimenter?" E then suggested that the confederate wait in the next room while S learned about the procedure he would have to follow

Next E explained to S how he should train the confederate in the concept task, i e, how he should present the stimuli and how he should administer shock when the confederate made an error The "aggression machine" was arranged so that a wooden barrier separated S and the confederate, and talking was prohibited by E's instructions Each time the confederate responded incorrectly to the stimulus, i e, pressed an incorrect switch in response to a pattern of lights presented by S, the latter was told to depress a "shock" switch which presumably delivered a 100-volt shock to the confederate Since the arousal of dissonance depended on S's believing that the confederate had received shock, a loud click sounded and a light above the shock switch flashed on each time S depressed the switch The shock, of course, never reached the confederate, who disconnected the circuit by means of a concealed switch on his panel Throughout the "learning" trials, however, he behaved as though he was receiving shock, gasping audibly whenever S depressed the shock switch

After completing his explanation of the concept formation test, E showed S what a 40-volt shock would feel like, ostensibly to acquaint him with what his "subject" would be experiencing E emphasized that the confederate would receive more than twice that amount, i e, 100 volts After experiencing the 40-volt shock, S was asked to rate how much pain he thought the confederate would experience when receiving the 100-volt shock The rating scale ran from 1 = "No pain or discomfort at all" to 7 = "Extremely great pain" At the end of the experiment S rated how much pain he thought the confederate had actually experienced The before-to-after change in his rating was used to assess whether S tried to minimize the painfulness of the shocks as a means of reducing dissonance

*Manipulating Choice* Following S's initial rating of the shock, the choice manipulation was introduced In the No Choice condition, the confederate was brought in, briefly informed of the procedure he was to follow, and then the test was begun In the Choice condition E first gave S the option to leave Employing a modified version of

instructions described by Brock and Buss (1962), *E* made these comments

Although you came up here today and have already taken part in some of the tests, I want to emphasize that you're under no obligation to continue with the remainder of the tests if you don't want to. You can leave if you want to—some students have preferred not to get involved in this next test and have left. In other words, participation is entirely up to you, you don't have to feel any obligation toward me. The study can always try to get other students. Do you want to continue?

If *S* said "Yes" at this point, *E* said

Are you sure? You know it's entirely up to you whether or not you stay and give the shocks. The responsibility is really yours. Are you willing to do it?

If *S* said "Yes" for a second time, the choice manipulation was concluded. *E* then brought in the confederate and he was engaged in the concept formation test. (Only two *Ss* refused to administer shock.)

There were 60 "learning" trials during which the confederate presented a programmed series of responses so that the number of incorrect responses (and therefore shocks) was 24 in the 60 trials. Since the confederate gasped and moved in discomfort each time the shock switch was pressed, it was assumed that *S* thought he was causing the confederate considerable pain, a cognition which was dissonant with *S*'s reported opposition to the use of shock in research. After the 60th trial was completed, the confederate was asked to wait in the next room while *S* was given some further tests. *E* explained that as soon as *S* was finished, the confederate would also be given additional tests.

*Postsession* The next step required *S* to rerate the confederate on the three-item "friendliness" questionnaire described above. The rationale given for this second rating was that *S* was now better acquainted with the other student (i.e., the confederate), and *E* was therefore interested in *S*'s present impressions. The anonymity of *S*'s responses was stressed. The before-to-after change in *S*'s ratings of friendliness was the major dependent variable used in this study.

After completing the ratings, *S* responded to a questionnaire designed to measure (1) his attitude toward the use of electric shock in research (the same item used in selecting the *Ss*), (2) his judgment of the painfulness of the shocks he administered to the confederate (the same item given before the concept formation test), and (3) the effectiveness of the choice manipulations.

The postexperimental questionnaire was followed by an interview



designed to determine whether or not S was suspicious of any aspect of the experimental procedure S was then given an exhaustive explanation of the true purpose of the experiment, including the fact that the reports were incapable of correctly evaluating a person's intelligence and personality The importance of experimental deceptions was explained and not until S seemed satisfied was the experiment ended S was asked not to discuss the study with his friends, and there was no evidence to indicate that Ss did not comply with this request

## RESULTS

### *Effectiveness of the Experimental Manipulations*

Level of self-esteem, or the number of favorable self-appraisals was one of the two independent variables manipulated in this study Before assessing the effectiveness of the self-esteem manipulations, it was necessary to determine whether initial level of self-esteem was equivalent in the experimental conditions The adjective checklist measure of self-esteem administered before the experiment provided the data for determining this equivalence. Comparison of the mean checklist scores for the High and Low Self-Esteem conditions revealed a significant difference at the .05 level (means = 30.33 and 21.57, respectively) <sup>6</sup> A further analysis was therefore undertaken to determine whether the conditions were equivalent at least in terms of relative proportions of high and low self-esteem Ss Accordingly, all checklist scores were dichotomized at the combined median for the entire sample Table 1 shows that in the two Self-Esteem conditions there are

*Table 1* Number of Ss scoring above and below the median score for initial level of self-esteem

	Experimental condition	
	High self-esteem	Low self-esteem
Above median self-esteem checklist score	16	12
Below median self-esteem checklist score	14	18

approximately equal numbers of Ss having initial checklist scores above and below the median ( $\chi^2 = 62$ ,  $n.s.$ ). The data then suggest an initial equivalence in median level of self-esteem

<sup>6</sup> All significance levels reported in this paper are based on two-tailed tests

between the two experimental conditions, although they do not permit us to say unequivocally that there was no initial difference. However, as we report in the next section, the mean difference in initial self-esteem appeared to exert little effect on the relationship between manipulated self-esteem and changes in friendliness.

The effectiveness of the self-esteem manipulations (i.e., the falsified test reports) was evaluated by comparing the High and Low Self-Esteem groups on level of self-esteem as measured by the polar adjective 7-point scales. The range of mean self-favorability scores on this measure ran from a low of 1 to a high of 7. The mean score was 5.69 for the High Self-Esteem condition and 4.12 for the Low Self-Esteem condition, the difference being significant at beyond the .001 level ( $t = 8.72, 58 df$ ). We may conclude thus that the intended differences in self-esteem were successfully induced by the falsified test reports.

The manipulation of the second independent variable, choice, also appeared to be generally successful. This can be seen by examining Ss' postexperimental responses to two 7-point scales: (1) "how much choice do you feel you had in whether or not you took part in the conceptual learning test?" where 1 = "No Choice At All," and 7 = "Complete Choice", (2) "To what extent did you feel it was up to you whether or not you administered the shocks?" where 1 = "Not At All Up To Me," and 7 = "Completely Up To Me." The mean ratings on the first item were 6.50 for the Choice condition and 4.50 for the No Choice condition ( $t = 1.90, 29 df, p < .10$ ). On the second item (which measured S's perceived obligation to administer shock), the mean rating in the Choice condition (5.26) was higher than in the No Choice condition (3.50), but here a high score means little perceived obligation. The difference between the mean ratings was significant at beyond the .01 level ( $t = 3.20, 58 df$ ). It would seem therefore that Choice Ss perceive more choice and less obligation in administering shock than do No Choice Ss.

### *Change in Level of Friendliness*

The major dependent variable was the change in S's feelings of friendliness toward the confederate. The mean change scores are presented for each experimental condition in Table 2, along with the mean level of friendliness prior to the administration of

Table 2 Mean before and change scores of friendliness ratings

	Experimental condition			
	High Self-Esteem		Low Self-Esteem	
	Choice (N = 15)	No Choice (N = 15)	Choice (N = 15)	No Choice (N = 15)
Before scores <sup>a</sup>	8.53*	9.33	10.00	9.93
Change scores <sup>b</sup>	-1.33, *	+ .20	+ .80	+ .07

Note. The lower the before score the more the initial friendliness, the range running from a low of 3 to a high of 21. Since signs were reversed, a negative change score indicates a decrease in friendliness toward the confederate, a positive score indicates an increase in friendliness.

<sup>a</sup> High versus Low Self-Esteem,  $F = 3.14$ , *n.s.*, Choice versus No Choice,  $F = .40$ , *n.s.*, Interaction,  $F = .54$ , *n.s.*

<sup>b</sup> High versus Low Self-Esteem,  $F = 8.15$ ,  $p < .05$ , Choice versus No Choice,  $F = 1.30$ , *n.s.*, Interaction,  $F = 10.48$ ,  $p < .01$ .

\* By the Duncan Multiple Range Test, none of the cells in the first row are significantly different from one another at the .05 level. In the second row, the cell containing subscript 1 is significantly different from the others at the .05 level.

shock. An analysis of variance of the change scores revealed a highly significant interaction between the Choice and Self-Esteem treatments ( $p < .01$ ). The data indicate that under Choice there is a decrease in level of friendliness for Ss in the High but not in the Low Self-Esteem condition, whereas under No Choice level of friendliness remains about the same in both self-esteem conditions. Moreover, the mean reduction in friendliness is significantly different from zero only for the Choice, High Self-Esteem condition ( $t = 3.59$ , 14 *df*,  $p < .001$ ), the other mean change scores fail to reach the 5 per cent level of significance.

In the previous section, we reported a mean difference in initial self-esteem between Ss in the High and Low Self-Esteem conditions. This difference may have contributed to some of the variance in the change scores, rendering equivocal any interpretation of the interaction between the Choice and Self-Esteem treatments. If Ss in the High Self-Esteem condition began the experiment with a more favorable self-image than those in the Low Self-Esteem condition, then the changes in friendliness might be due to variations in initial self-esteem rather than in manipulated self-esteem. We therefore decided to carry out an analysis of covariance on the change scores partialing out the variance associated with initial self-esteem. This procedure yielded adjusted mean change scores which were virtually identi-

cal with those reported in Table 2. Moreover, the within-conditions correlations between initial self-esteem and the change scores were uniformly nonsignificant (all  $r$ 's  $< .40$ ). On the basis of these results, we may conclude that changes in friendliness are associated with manipulated self-esteem as predicted.

The possibility still exists, however, that the significant interaction between choice and self-esteem might be due to some systematic relationship between change and before scores. Three additional analyses were performed in order to check on this possibility. The results provide no evidence of a relationship between change and before scores. First, an analysis of variance of the before scores failed to yield any significant differences between the four before-score means. Secondly, an analysis of covariance indicated that the interaction mean square for choice and self-esteem was still significant after partialing out any effects of the before scores. Third, none of the four correlations between the before and change scores was statistically significant (all  $r$ 's  $< .45$ ).

It should be noted that unlike the Choice, High Self-Esteem condition, a decrement in friendliness does not appear in the Choice, Low Self-Esteem condition. In fact the mean change score (+.80) is in the direction of an increase in friendliness, although it is not significantly different from zero. This finding is somewhat surprising, since one might expect that S's choice to administer shock would arouse some (minimal) dissonance even if he has low self-esteem. Apparently however, S's decision to administer shock was consistent with a negative self-conception, and the voluntary act of injuring another was not sufficiently discrepant to be dissonance-arousing. Some support for this position can be found in the results of previous experiments. For example, Deutsch, Krauss, and Rosenau (1962) have demonstrated that for an act to arouse dissonance it must not only be voluntary but also inconsistent with a positive self-image.

#### *Alternative Ways of Reducing Dissonance*

Previous experiments have shown that postaggression dissonance can be reduced in other ways than by a reduction in friendliness (e.g., Brock & Buss, 1962). It is possible, for example, that Ss reduced dissonance by judging that they were obligated

Table 3 Alternative ways of reducing postaggression dissonance.

	Experimental condition			
	High Self-Esteem		Low Self-Esteem	
	Choice (N=15)	No Choice (N=15)	Choice (N=15)	No Choice (N=15)
A Mean amount of perceived choice <sup>a</sup>	6.73 <sub>1</sub> <sup>*</sup>	4.53 <sub>2</sub>	6.27 <sub>1</sub>	4.47 <sub>2</sub>
B Mean amount of perceived obligation <sup>b</sup>	5.33 <sub>1</sub>	3.60 <sub>2</sub>	5.20 <sub>1</sub>	3.40 <sub>2</sub>
C Mean amount of change in perceived painfulness of the shocks <sup>c</sup>	0.00	+13	+67	+40
D Mean amount of attitude change <sup>d</sup>	+9.80	+5.00	+9.87	+3.73

<sup>a</sup> The higher the score the greater the perceived choice. High versus Low Self-Esteem,  $F = 62$ , n.s., Choice versus No Choice,  $F = 35.29$ ,  $p < 0.01$ , Interaction,  $F = 36$ , n.s.

<sup>b</sup> The higher the score the less the perceived obligation to administer shock. High versus Low Self-Esteem,  $F = 08$ , n.s., Choice versus No Choice,  $F = 8.77$ ,  $p < 0.01$ , Interaction,  $F = 0.04$ , n.s.

<sup>c</sup> A positive change score indicates an increase in perceived painfulness from before to after administration of the shocks. High versus Low Self-Esteem,  $F = 4.47$ ,  $p < 0.10$ , Choice versus No Choice,  $F = 08$ , n.s., Interaction,  $F = 85$ , n.s.

<sup>d</sup> A positive score indicates attitude change in a direction favorable toward the use of electric shock on humans in scientific research. High versus Low Self-Esteem,  $F = 04$ , n.s., Choice versus No Choice,  $F = 2.59$ , n.s., Interaction,  $F = 03$ , n.s.

<sup>\*</sup> Within each row, the cells with different subscripts differ significantly from one another at the 05 level by the Duncan Multiple Range Test. The only exception is in Row B where 5.33 is significantly different from 3.60 at the 10 level.

to administer the shocks, a cognition which is consonant with a positive self-image. An analysis of variance was carried out on Ss' responses to the choice and obligation items described in the section on effectiveness of the experimental manipulations. Table 3, Rows A and B show that under Choice conditions Ss perceived more choice ( $F = 35.29$ ,  $p < 0.01$ ), and less obligation ( $F = 8.77$ ,  $p < 0.01$ ) than under No Choice conditions. Moreover there were no significant outcomes for manipulated level of self-esteem. These findings suggest that Choice Ss did not perceive themselves as obligated to administer shock but rather perceived that they had freely chosen to deliver shock. Correlations between choice, obligation, and unfriendliness change scores were non-significant in all conditions ( $r$ 's  $< 0.40$ ), except for the Choice, High Self-Esteem treatment where the relationship between choice and increased unfriendliness ( $r = +0.64$ ) was significant at beyond the 0.1 level. The latter finding is of course consistent with theory, and the lack of other significant correlations lends support to the conclusion that Ss were not reducing dissonance by judging themselves as obligated to administer the shocks.

Another avenue by which Ss could have reduced postaggression dissonance is pain minimization, or the judgment that the electric shocks are less painful after administration than before. An attempt was made to close off this avenue of dissonance reduction by having the confederate behave as though he was experiencing great pain, i.e., by gasping audibly each time S depressed the "shock switch." It was expected that this procedure would make it difficult for Ss to maintain that the shocks did not really hurt their victim. If, on the other hand, the procedure proved ineffective and Ss used pain minimization as a mode of dissonance reduction, one would expect greater minimization to occur under Choice, High Self-Esteem than under Choice, Low Self-Esteem. This was in fact not the case. Table 2, Row C summarizes the before-to-after changes in Ss' ratings of the painfulness of the shocks. The between-conditions differences are uniformly nonsignificant, and consistent with expectations, there is zero change in the Choice, High Self-Esteem condition. Moreover, what little change does occur in the other conditions is toward a perception of increased painfulness.

In addition to perceived obligation and pain minimization, Ss might have reduced dissonance by becoming more favorable toward the use of electric shock in scientific research. An attitude in favor of shock would alter the psychological implications of administering shock so that the act would not necessarily be dissonant with a positive self-image. As with pain minimization, one would expect more positive attitude change to occur in the high dissonance condition (Choice, High Self-Esteem) than in the others. Table 2, Row D shows the mean attitude change scores based on measures taken before and after the experiment. Although there is some positive change in all conditions (with the greatest amount occurring under Choice), high within-condition variance prevented all differences from reaching statistical significance. In addition, correlations between positive attitude change and increased unfriendliness were nonsignificant in all four conditions ( $r$ 's  $< .35$ ). While these results suggest that attitude change played a minor role in Ss' attempts to reduce dissonance, the fact remains that some change did occur, particularly under the choice conditions. The possibility exists therefore that some Ss may have employed attitude change and increased unfriendliness as com-

plementary avenues of dissonance reduction. However, the absence of any within-conditions correlations between these variables would seem to suggest that very few Ss employed both modes of dissonance reduction

#### DISCUSSION

The results reported above support the main hypothesis of the present experiment, i.e., the option of choosing to administer shock plus a positive self-image combine to arouse the greatest amount of dissonance. A direct consequence of this dissonance is increased unfriendliness toward the person who has received the shock, a cognition which is consonant with the aggression and thus reduces dissonance.

In the analysis of the change scores, it was shown that choosing to deliver shock did not by itself result in a reduction in level of friendliness. Earlier studies (e.g., Davis & Jones, 1960) have documented the importance of choice in postaggression reevaluation of the injured person, but as with the Davis and Jones experiment, the present study suggests that the conditions under which choice is made should be specified. It would appear that the choice to behave in an aggressive manner must be dissonant with a positive self-image in order for negative reevaluation (e.g., increased unfriendliness) to occur. In considering the consequences of choosing to aggress, therefore, it is essential to take account of personality factors, as in this study where we manipulated the aggressor's level of self-esteem. The combination of high self-esteem and choice appeared to be the necessary and sufficient condition which aroused dissonance and consequent negative reevaluation.

This conclusion should not be construed as implying that choice in the absence of high self-esteem will produce only minimal dissonance. Since the present experiment only involved behavior which was discrepant with a positive self-image, the generality of our findings on the role of choice must await further experimentation. Specifically, a replication is needed in which the experimentally induced behavior is discrepant with a negative self-image as, for example, where a person of low self-esteem performs an act of kindness and consideration. Under such conditions choice may be both necessary and sufficient for the arousal

of dissonance. On the basis of the results reported here, however, we can say that in order to arouse postaggression dissonance, the commitment implicit in choosing to injure another must be a commitment which is also discrepant with a positive self-image.

Although the purpose of the present experiment was to test a derivation from dissonance theory and not to explore the role of sex differences in dissonance-arousal, there is suggestive evidence from other studies that the sex of the victim has an effect on postaggression dissonance. In the study by Brock and Buss (1962), which was somewhat similar to the present experiment, it was found that when the victim was a male, pain minimization was the primary mode of dissonance reduction. With a female victim, the evidence suggested that "expression of great obligation to shock was used to reduce dissonance" (Brock & Buss, 1962, p. 201). It might well be that with a female victim similar effects would be observed in this experiment, i.e., increased dislike as an avenue of dissonance reduction may be restricted to instances where the victim is male.

The possibility that sex of the victim affects the arousal and reduction of postaggression dissonance is an intriguing problem for future research. It does not mean, however, that dissonance theory must be modified to take account of sex differences. These differences may simply reflect the type of induction used to arouse dissonance in a given experiment. Thus, administration of shock to men and women may have quite different psychological implications, but this does not mean that the logic of the dissonance model varies with the sex of the victim. Rather the issue is methodological, i.e., a matter of specifying how a particular dissonance operation is affected by the sex variable. In any event, it remains to be seen whether sex, either of the victim or the aggressor, is a factor affecting postaggression increments in dislike.

The present experiment has implications for the role of dissonance theory in bridging the gap between personality and at least some forms of social behavior, i.e., interpersonal aggression. Although much has been written about the cathartic virtues of aggression (Dollard, Miller, Doob, Mowrer, & Sears, 1939), a number of investigators have noted that an aggressor sometimes shows increased dislike for the victim of his attack (Davis & Jones, 1960, Feshbach, 1956, Berkowitz, 1962). Attempts to explain this



increment in dislike have hypothesized an internal reaction in the aggressor which somehow enhances dislike of his victim. The specification of the internal reaction has remained unclear. Some (e.g., Buss, 1961) have maintained that when aggression occurs in the absence of anger, there is an increase in dislike of the victim, when aggression occurs in the presence of anger, a decrease takes place. Others (e.g., Berkowitz, 1962) have suggested that the increment is a function of feelings of guilt aroused by the aggressive behavior, since guilt implies frustration of S's need to think well of himself; dislike is aroused both toward himself and the victim, the latter being seen as at least partly responsible for the guilt-induced discomfort. Still others (e.g., Hokanson, 1961) have advanced an explanation closely related to the Berkowitz position, in which the aggressor is said to become anxious about the consequences of his aggressive behavior, the anxiety is experienced as a frustration and leads to increased dislike of the victim.

These explanations emphasize transitory emotional states of the aggressor, and tend to overlook cognitive aspects of his personality as possible factors producing postaggression increments in dislike (Brim, Glass, Lavin, & Goodman, 1962). The results of the present experiment lead to a contradictory suggestion that the cognitive personality variable, self-esteem, is an important determinant of such increments. Self-esteem, when viewed in the light of its role in arousing dissonance, leads to a derivation which specifies the nature of the psychological process giving rise to increased dislike. The dissonance formulation suggests that individual differences in self-esteem may account for postaggression increments in dislike without recourse to generalized internal reactions such as guilt. Of course dissonance itself is an intervening construct, but it appears to generate more specific predictions. A guilt or anxiety hypothesis fails to specify the conditions under which aggression will give rise to the anxiety or guilt and thus to increased dislike.

#### SUMMARY

A study was designed to test the hypothesis that postaggression increments in unfriendliness are directly related to the amount of cognitive dissonance aroused in the aggressor. It was further hypothesized that dissonance is greatest where the aggres-

sor (1) has a positive self-conception, and (2) chooses to deliver pain when this aggression is contrary to his beliefs. It was predicted that under these conditions the aggressor would reduce dissonance by becoming more unfriendly toward his victim, a cognition which is consonant with his aggressive behavior. Participating in the experiment were 60 male undergraduates opposed to using electric shock on humans in research. Ss were divided into two groups: one received a fraudulent psychological test report designed to enhance self-esteem, the other a report which lowered self-esteem. Ss in both groups delivered electric shocks to an experimental confederate posing as another student. Half of the Ss in each self-esteem group delivered the shocks under voluntary conditions, the other half under nonvoluntary conditions. The dependent variable was the amount of change in S's self-ratings of friendliness toward the confederate from before to after administration of the shocks.

The results supported the main hypothesis. Ss in the Choice, High Self-Esteem condition showed a significant increase in unfriendliness, whereas only minimal change appeared in the other three conditions. These findings indicated that choosing to engage in behavior discrepant with one's beliefs (i.e., choosing to deliver shock) must imply a discrepancy with one's positive self-image in order to arouse dissonance and consequent increased unfriendliness. Additional evidence indicated that perceived obligation and pain minimization were not employed as alternative modes of dissonance reduction. Although some attitude change appeared in all conditions, the differences between conditions were not significant, thereby suggesting that attitude change also played a minor role in Ss' attempts to reduce dissonance. The results were discussed in terms of their implications for a dissonance theory approach to personality and interpersonal aggression.

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