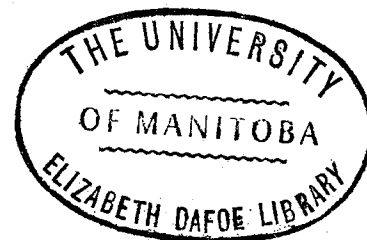


**AN EXTENSION OF COGNITIVE DISSONANCE THEORY
TO EMOTIONALLY AROUSED SITUATIONS**

**A Thesis Presented to the Faculty of Graduate Studies,
University of Manitoba,
In Partial Fulfillment of the Requirements for the
Degree of Master of Arts**

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September, 1970



Acknowledgements

The author wishes to express his appreciation to Dr. Robert Altemeyer for his guidance and assistance throughout all phases of this study. Thanks are also extended to Dr. J. G. Adair and to Dr. H. H. High for their critical reading of the paper and helpful suggestions.

In addition, the author is grateful to Thelma Sures, Ronnie Hollander, Carol Bubic, and Carol Altman, all of whom served as confederates in the experiment.

Abstract

Previous research in attitude formation and change has usually been conducted in situations relatively devoid of involving, emotional elements. Thus it is suggested that psychologists may be ignoring or misinterpreting an important component of "attitudes," and the present study investigates this possibility.

Seventy-two female introductory psychology students were randomly assigned to one of six experimental conditions. They received either high, moderate, or low monetary reward for correctly learning a "concept," and were also made to experience high or low choice in completing the experiment. The basic experimental situation was unpleasant and emotionally arousing—a "learning task" which required subjects to study pairs of gruesome pictures. Results obtained by a post-experimental questionnaire indicated that the volition manipulations were successful. However, the data indicated no significant attitudinal or behavioral trends among experimental conditions. Thus, the data supported neither the predictions made by an extension of cognitive dissonance theory, nor those made by opposing "incentive" theories. Possible interpretations of the data are discussed, and suggestions are made for future research.

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Introduction

Statement of the Problem

The term "attitude" has been given a variety of definitions by different theorists. For instance, Allport (1935) defined attitude as "a mental and neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related (p. 810)." Hovland, Janis, and Kelley (1953) have drawn a distinction between opinions and attitudes, such that the term "opinion" is used to "designate a broad class of anticipations and expectations," and the term "attitude" is used "exclusively for those implicit responses which are oriented toward approaching or avoiding a given object, person, group, or symbol (p. 7)." Rosenberg (1956) has suggested that an attitude is a "relatively stable affective response to an object (p. 325)." An operational definition has been offered by Osgood and Tannenbaum, such that an attitude toward a concept is its projection onto the "evaluative dimension" of the "semantic differential" which they have developed (1955; Osgood, Suci & Tannenbaum, 1957). Staats and Staats have suggested that "an attitude is an 'emotional' response to a stimulus (1967, p. 373)," while Lott and Lott equate attitude with "a positive preference (1955, p. 367)."

All of the above definitions seem to admit to both cognitive and affective elements of "attitudes." Cognitive dissonance theory (Festinger, 1957), on the other hand, is a notable exception in this regard, since it explicitly deals only with cognitive elements of

attitudes, and, as Festinger suggests, "by the term cognition ... I mean any knowledge, opinion, or belief about the environment, about oneself, or about one's behavior (p. 3)."

In an attempt to permit a more productive approach to the study of attitudes, Fishbein (1967) has suggested a distinction between beliefs and attitudes. He has suggested that "Attitudes are learned predispositions to respond to an object or class of objects in a favorable or unfavorable way. Beliefs, on the other hand, are hypotheses concerning the nature of these objects and the types of actions that should be taken with respect to them (p. 257)." Thus, the term attitude would be used with reference to affective (evaluative) components, while the term belief would include cognitive and conative (action) components.

Two Observations

While many theorists have stated that emotions are associated with or are indeed components of attitudes, the research literature on attitudes has failed to come to grips with the relevance of emotions in at least two ways. First, most attitude studies have dealt with topics that were emotionally insignificant to the subjects involved--probably because such attitudes are the easiest to change. Secondly, the dependent variable in most attitude studies has been a self-description of position along some psychometric scale(s), as measure bound to minimize the emotional and maximize the cognitive aspects of an attitude. The present study attempted to avoid the first general shortcoming of previous research in attitudes. For reasons described

immediately below, however, it succumbed to the second.

It would seem beneficial to use the term "affect" only when there is a definite psychological change of an emotional nature in the organism (i.e., changes in visceral performance, changes in glandular secretion such as sweat and hormone secretion, changes in muscle tension, and so on). The measurement of these changes has proven extremely difficult in past studies, however, and in fact, it seems that none of the measures used (e.g., heart beat, GSR, blood pressure) constitute a valid and reliable measure of emotions in attitude change research. Problems arise, for instance, in determining whether the physiological changes measured have been caused by the manipulation of the independent variable or whether they are merely an artifact of the measurement technique used.

Thus, in spite of its limitations as an instrument in measuring affect, the technique of having subjects report their affective response on a numerical scale seems to be as good, if not better, than other known physiological measures. For this reason, then, subjective ratings were used in the present study to measure affect. Thus, the present study is subject to the second criticism of attitude research mentioned above--i.e., a primarily cognitive measure is being used in a study which purports to deal with emotions.

However, while the measurement of physiological changes in subjects is admittedly very difficult, it is important that attempts be made to have the subject become emotionally involved, such that physiological changes may at least be assumed to be taking place.

Thus, while previous research would seem to have been limited in the degree of affect present in the study, the present experiment attempted to utilize a much greater emotional element, making it much more likely that physiological changes accompanied the "emotions" reported by the subjects.

Purpose of the Present Study

The purpose of this study, then, was to test an extension of Festinger's cognitive dissonance theory (which thus far has been concerned only with cognitions) in an experimentally induced situation which was affectively as well as cognitively rich. Furthermore, the predictions one might make through dissonance theory were compared with the predictions that would seem to be made by several other theories.

Dissonance Theory

According to Festinger, "two (cognitive) elements are in a dissonant relation if, considering these two alone, the obverse of one element would follow from the other (1957, p. 13)." Festinger suggests that there are two basic hypotheses to his theory. First, "the existence of dissonance, being psychologically uncomfortable, will motivate the person to try to reduce the dissonance and achieve consonance." Second, "when dissonance is present, in addition to trying to reduce it, the person will actively avoid situations and information which would likely increase the dissonance (p. 3)." Festinger goes on to suggest that the dissonance may be reduced by changing a behavioral cognitive element, changing an environmental cognitive element, or by

adding new cognitive elements.

Thus, for example, when an individual takes part in a long, boring task and gets very little reward for telling another individual that the task was really quite interesting, dissonance is aroused. When Festinger and Carlsmith (1959) conducted an experiment involving the above situation, they found that subjects who were paid little for describing the task (putting spools on trays and turning pages for one hour) as interesting to a "future subject" were much more likely to rate the task as an interesting, enjoyable experiment than were subjects given a more substantial monetary reward. Thus, those subjects who were paid little attempted to reduce dissonance by, in effect, thinking, "This was really a very interesting experiment, and I enjoyed it a great deal," while those subjects who were given a high monetary reward experienced much less dissonance, since they could readily admit that it was a long, boring task (at least Festinger and Carlsmith considered it to be a long, boring task). Rather, they could "explain" their subsequent description of the experiment as interesting by thinking "I did it for the money."

Brehm and Cohen (1962), in their extension of dissonance theory, have suggested that the magnitude of dissonance is directly related to the degree of volition the subject feels he had in becoming involved in a particular situation. Thus, an individual who feels that he had a great deal of control over whether or not he participated in a dissonance-arousing situation will experience considerably more dissonance than an individual who believes he had no (or very little)

choice in entering the situation (i.e., he feels that he was "forced" into the situation). Research since 1962 has indicated "volition" is an extremely important factor in the arousal of dissonance (e.g., Lindler, Cooper & Jones, 1967).

In most, if not all, cognitive dissonance experiments in the past, there has been a mixture of cognitive and emotional elements. However, the primary emphasis in these experiments was placed on the cognitive components of the situation, since dissonance theory deals specifically with "cognitions." For example, participating in a counterattitudinal act such as writing an essay which conflicts with one's attitudes undoubtedly involves some (though probably relatively mild) emotional effects (e.g., Elms & Janis, 1965; Cohen, Terry & Jones, 1959). One study, conducted by Collins and Helmsreich (1965) asked subjects to write counterattitudinal essays, but the emotional elements of the situation were stronger than those in many other experiments. Subjects first rated eight solutions of unsweetened quinine (rather unpleasant task, since the solutions tasted quite bitter), then wrote a counterattitudinal essay pointing out the pleasant aspects of the previously rated solutions for either fifty cents or two dollars, and finally the subjects rated the remaining eight solutions of quinine. However, the data (i.e., before-after change scores) indicated that reward had no effect on subjects' ratings, and thus the results offered no support for either dissonance theory or reinforcement theory.

Some "cognitive dissonance" experiments have used basically "unpleasant" experimental situations in the sense that subjects are

confronted by a long and boring task (e.g., Festinger & Carlsmith, 1959; Brehm & Cohen, 1959). However, these studies probably aroused little affect in the sense of physiological changes taking place in the individual. Rather, the negative affect aroused (i.e., the "dislike" for the task) was centered primarily on cognitive thoughts such as "This is a waste of my time," etc. In fact, data from the control group in the Festinger and Carlsmith study indicated that these subjects rated the experimental task as very close to "neutral" on a scale designed to measure how enjoyable or unenjoyable they found the task.

A problem in many dissonance experiments involving boring and/or unpleasant situations is the fact that the subject rarely takes part in the "unpleasant" task, but rather is merely informed that he will be taking part in such a behavior. Thus, any negative affect which may be aroused is likely to be a form of anxiety or fear of the coming experimental task rather than unpleasantness caused by the task itself.

If subjects are in fact asked to participate in an unpleasant task, the task may turn out to be too unpleasant, and large numbers of subjects may refuse to perform the task, and drop out of the experiment. For example, Smith (1961), in a dissonance experiment, asked his subjects to eat a grasshopper. Nearly half of his subjects refused and left. Kiesler, Collins and Miller (1969), with respect to this experiment, have suggested that "For theoretical reasons then, we would want all subjects to actually perform the act, whatever it might be, but to manipulate experimentally the person's perceived choice in

performing the act (p. 210).” This statement seems to have a general applicability to dissonance experiments, and the present experiment has been designed to meet the above requirements.

Reinforcement Theories

Several theories would seem to make predictions opposed to those made by cognitive dissonance theory in the present situation, involving both affective and the usual cognitive components.

Hovland, Janis and Kelley (1953) have drawn a distinction between opinions and attitudes (discussed earlier in this paper). They go on to suggest that a change in opinion may result in a change of attitude for an individual, and that the acceptance of the new opinion is contingent upon the incentives that are offered in a particular communication. More recently, Janis has restated his position more precisely, applying incentive theory specifically to role-playing situations: “According to incentive theory, if a very large reward generates negative affect, it will tend to interfere with acceptance of the conclusions advocated in the role-playing performance; but if the monetary reward elicits positive feelings of gratitude and satisfaction, we would expect it to facilitate acceptance (Janis & Gilmore, 1965, p. 65).” Applying this theory to a situation involving the manipulation of affect, we would expect that the greater the magnitude of positive affect (“pleasantness”) associated with a particular situation, the greater the degree of “positive attitude” that particular individual would have towards that situation, and the greater the magnitude of negative affect (“unpleasantness”) associated

with the situation, the greater the degree of "negative attitude" that particular individual would have towards the situation (assuming no suspicion or evaluation apprehension has arisen in the situation).

Rosenberg (1960a) suggests that attitude acquisition and change may result from one or both of two distinct sequences. First, cognitive change may be followed by affective change, or second, affective change may be followed by cognitive change. Thus, Rosenberg suggests that a change in feeling about an attitude object will result in a cognitive change about the same attitude object. In two experiments, Rosenberg (1960a, b) attempted to manipulate affect through posthypnotic suggestion, and studied consequent cognitive reorganization. His results indicated that subjects' beliefs changed in the direction of the manipulated affective change. Thus, we might expect an individual in a positive affective state with respect to an attitudinal object, also to acquire, maintain, or change to a positive belief state with regard to that object.

The "classical conditioning" theory of Staats and Staats (1958; Staats, 1967) suggests that, consistent with the basic principles of learning, all words and similar symbolic stimuli have attained their power to elicit emotional and affective responses through previous classical conditioning. Thus, the greater the reinforcement or reward associated with a particular stimulus, the greater will be the tendency for a given individual to "like" that stimulus (i.e., to find that stimulus "pleasant").

The theory of Lott and Lott (see, for instance, Lott, 1955) is

similar to that presented by Staats and Staats, but the process of "mediated generalization" is emphasized rather than strict classical conditioning. Thus, Lott suggests that "A positive preference or attitude toward an object with which an individual has had only neutral experience can be developed through mediated generalization (1955, p. 367)."

Thus, in a situation involving positive and/or negative affect, all of the above theories would seem to make similar predictions, and these predictions differ sharply from those made by dissonance theory.

The Present Study: Hypotheses

In this experiment then, subjects were faced with a basically "unpleasant" task, but also received varying amounts of monetary reward ("pleasantness") for completing the task correctly. In addition, volition was manipulated by giving subjects high or low choice as to whether or not they would complete the experiment. The main dependent variable was a question on the post-experimental questionnaire. Subjects were asked to rate how pleasant or unpleasant they had found the experimental task. In addition, subjects were asked whether or not they would commit themselves to participating in a similar experiment in the near future. It was predicted that the attitudes of the subjects, as measured in the experiment, would be consistent with predictions made by Festinger's, and Brahm and Cohen's theory of cognitive dissonance. Specifically, two hypotheses were made.

Hypothesis 1. Subjects' attitudes towards the experimental task are inversely related to the amount of pleasantness (here, monetary reward) associated with the unpleasant experimental task. This will

be shown in the data by, (1) the degree to which subjects rate the pictures they have studied as "pleasant" on a seven-point scale. That is, the smaller the reward, the greater the tendency to perceive the experimental task as more pleasant; and (2) the proportion of subjects who commit themselves to, and later actually appear in order to participate in a "future similar experiment." That is, the smaller the reward, the greater the tendency to commit oneself to participate in the future experiment.

The "incentive theory predictions," on the other hand, seem to suggest, (1) that the greater the reward, the greater the tendency for subjects to perceive the experimental task as more pleasant; and (2) that the greater the reward, the greater the tendency for subjects to commit themselves to participation in a future similar experiment.

The present experimental situation might also be viewed as basically a "conflict situation" (Miller, 1959) for the subject, in that she is receiving both positive and negative reinforcement for participating in the experimental situation. By increasing the amount of reward for correctly completing the experimental task, the "strength of approach" should also be increased, which in turn should increase the subject's tendency to approach the "feared" (i.e., "unpleasant") goal. Since the distance from the experimental situation (the "goal") and the strength of the fear-arousing stimulus (unpleasant pictures) are both kept constant, we would expect greater reward in the "goal" situation to elicit a more "pleasant" rating of the situation, and a greater tendency to commit oneself to another "approach" of the "goal"

(i.e., the greater the tendency to commit oneself to participation in a future similar experiment). The approach-avoidance conflict may also appear as an increased tendency to "freeze," vacillate, or to escape from the situation, as the reward decreases. Thus, the predictions made by "conflict theory" are consistent with the predictions made by the "incentive theories."

Hypothesis 2. Subjects' attitudes towards the experimental task are directly related to the volition the subjects feel they have in participating in the experiment. Thus, the greater the perceived volition, (1) the greater the tendency to rate the experimental task as more pleasant; and (2) the greater the tendency to commit oneself to participation in a similar future experiment.

In addition to the above hypotheses, it was expected that a significant interaction would occur between the volition and reward ("pleasantness") manipulations, such that high volition subjects would be more affected by the reward manipulation (i.e., would experience more dissonance as reward decreased) than would the low volition subjects.

Method

Subjects

Seventy-two female introductory psychology students who were fulfilling course experimental participation requirements took part in this experiment. Twelve subjects (Ss) were randomly assigned to each of six cells in a 3 X 2 factorial design.

Design

The basic experimental situation was intended to be unpleasant and to produce "negative affect." High, moderate, or low monetary reward were then used to vary the mixture of negative and positive affect in the situation, and high or low volition were manipulated through the pre-experimental instructions given to the subject.

In all, the total experiment placed the subject in two or three different situations. In the first, which was disguised as a concept-formation task, the independent variables of reward and volition were manipulated. Here, Ss studied 11 pairs of gruesome pictures, and were given varying amounts of monetary reward each time they correctly discerned which of the two pictures (in the last seven pairs) contained a particular concept. As far as the subjects were concerned, this phase of the experiment constituted the entire experiment. When the concept-formation task was completed, Ss were sent to another room in the same building for an interview supposedly not directly connected with the experiment. The cover story suggested to Ss that the interview was to enable the head of the "Subject Pool" to get some student

reactions to the experiments they were participating in. At the interview, subjects filled out a questionnaire which asked them to rate how pleasant the experiment they had just participated in had been (the major dependent variable). A second question asked how "free" S felt in participating in the experiment, thus serving as a check that the volition manipulations were successful. Another question asked subjects how great the "mixed feelings" were that they had experienced while participating in the experiment. This question was intended to serve as a manipulation check with respect to the reward manipulations and the amount of "dissonance" subjects experienced.

Finally, at the close of the interview, Ss were asked if they would be willing to serve (immediately following the interview) in an experiment similar to the one in which they had just participated. If S would not volunteer, the experiment was over, and she was debriefed. However, if S did volunteer, she was sent to "Bill Donnegan's research room" to participate in the experiment. Here, Ss were casually interviewed by a confederate to determine the degree of suspicion and awareness present with respect to the entire experiment. These Ss were debriefed following the interview.

Procedure

Learning the Concept. In the first phase of the experiment then, "unpleasantness" was aroused by having the Ss look at a series of 11 pairs of pictures, each depicting a gruesome scene (e.g., mutilated corpses, very bloody battle scenes, starving children, a vivid picture of a heart transplant operation, etc.).

Female subjects were used primarily because it was felt that they would regard such pictures as unpleasant more so than would male subjects, thus making them more subject to dissonance arousal.

A simple concept ("suffering children") was common to one of the two pictures presented to S on each trial, and it was assumed that nearly all Ss would recognize this concept if the experiment were presented as a concept-formation task.

"Pleasant" affect was aroused in the situation by reward S for her correct choice in each pair of pictures. The first four trials for all Ss were "practice trials" during which the S was given ample opportunity to learn the concept. On each of these trials the experimenter (E) stated which of the two pictures being presented to S was the "correct" picture (i.e., S did not make a choice on these trials). The next seven trials were rewarded either by fifty cents and the word "good" (high reward), or by twenty-five cents and the word "good" (moderate reward), or merely by the word "good" (low reward) for each correct choice. Thus, the maximum rewards were three dollars and fifty cents for the high reward condition, one dollar and seventy-five cents for the moderate reward condition, and no money at all for the low reward condition.

Task Instructions. Upon appearing for their appointment in "Experiment Emocpt," Ss received the following instructions:

In this experiment we are interested in finding out if unpleasant situations interfere with a person's ability to form concepts. I will show you pairs of

pictures which you will probably find unpleasant. One of the pictures in each pair has something in common with one of the pictures in every other pair. For example, one of the pictures in each pair may show victims of automobile accidents. Actually it's not that of course, but there is some single feature or theme that half of the pictures have in common.

So, I am going to show you two pictures at a time, and one of those two pictures will have a theme which you will find in one of the next two pictures I show you, and in one of the next two, and so on.

I will give you four sample sets of pictures, and identify for you which picture in each pair contains the theme. That way, you can get some idea as to what the theme is by the time we get to the test trials, rather than spend a lot of time shooting in the dark.

So, in the first four trials you are to try to figure out what the theme is, and then in every trial thereafter it will be your task to pick out the picture containing that theme in each pair. I will ask you what you think the theme is at the end of the experiment. I will not be able to say anything except whether you are correct or incorrect on each trial until then. Do you have any questions about things

so far?

Okay, here is the first sample pair. Look at the pictures carefully. [Pause 15 seconds.] In this pair, the picture on your left [X also points to the correct picture in each case] contains the theme. [Pause 10 seconds.] Okay, here is the second sample pair. [Pause 15 seconds.] In this pair, the picture on your right contains the theme. [Pause 10 seconds.] Here is the third sample pair. [Pause 15 seconds.] In this pair the theme is in the picture on your right. [Pause 10 seconds.] Okay, here is the fourth and last sample pair. [Pause 15 seconds.] In this pair the picture on your left contains the theme. [Pause 10 seconds.]

There is a natural tendency for people to avoid looking at gruesome pictures like these. This is perfectly understandable in most circumstances, but for the purposes of this experiment it is necessary that you spend about 15 seconds studying each set of pictures before you make your guess, even if you think you have figured out the theme before that.

There is also a tendency among subjects to worry about whether their reactions to these pictures are being evaluated. I would just like to point out

that your (or any other individual's) reactions are of no consequence to this experiment. I am only interested in how people in general are able to form concepts in unpleasant situations like this one. The whole idea is to see how well people can do at an unpleasant task like this, and we'd like you to do your best.

Reward Manipulations. At this point, each S received one of the following reward manipulations:

High Reward:

To help motivate you, in fact, I am going to pay you fifty cents and say "good" each time you make the correct choice between the two pictures. You will of course be able to keep any money you earn during the experiment.

Moderate Reward:

To help motive you, in fact, I am going to pay you twenty-five cents and say "good" each time you make the correct choice between the two pictures. You will of course be able to keep any money you earn during the experiment.

Low Reward:

To help motivate you, I am going to say "good" each time you make the correct choice between the two pictures.

Volition Manipulations. After the above reward manipulations were carried out, the subject was made to feel either strongly obligated to complete the experimental task, or relatively free to leave the experimental situation through one of the following two sets of instructions.

Low Volition:

Occasionally, subjects may choose not to finish an experiment they are serving in. However, in this experiment it is necessary that you complete the entire experiment. For one thing, if any one subject does not complete the experiment, very serious problems are going to arise in the analysis of the data from the study. Also, as you have probably learned from your introductory psychology course, it will adversely affect the randomness of our sample. So, now that you are here, it is extremely important that you complete the entire experiment.

High Volition:

You are of course free to leave the experiment at any time, including right now if you wish. This is more or less a preliminary study for my Master's thesis, and thus no serious problems will arise if some subjects decide not to continue the experiment. Since you may find the task somewhat unpleasant, I will understand if you ~~do not~~ wish to continue the experiment. Are you

willing to continue the experiment? [E waits until S makes a definite commitment to continue the experiment.]

In addition to the above instructions, E signed the "experimental credit card" of each "high volition" S before the experiment began. For the "low volition" Ss, however, E asked for S's "credit card" at the beginning of the experiment, but merely took it from S and kept it until the end of the session before signing it.

The "Test Trials." All Ss were subsequently given the following instructions.

Now we are ready to start the test trials, during which you are to study each pair of pictures and then tell me which of each pair contains the theme. Please study each pair for about 15 seconds, after which I will ask you for your choices. Let's briefly review the sample pictures first. [The sample pictures are quickly reviewed.] Do you have any questions before we begin the test trials?

Okay, here is the first test trial.

The seven test trials followed. E replied to each of S's responses with the word "good" and the appropriate monetary reward, in addition to nodding his head, or by the word "wrong" and shaking his head. In total, the concept-formation and "test" phase of the experiment took

1

Had any S asked to leave the experiment before the end of the session, E would of course have signed her card and allowed her to leave. However, no S made such a request.

about 15 minutes to complete.

After the end of the test trials, the S was instructed:

That is the end of the test trials. Now I would like you to write on this piece of paper, briefly, what you think the theme was that you were looking for.

After S had complied with the above request, she was asked to sign a voucher for any money she might have earned during the experiment, and was then given the following instructions:

Thank you. That concludes this experiment.

There's another thing I'm supposed to ask you to do now, however. As you probably know, Dr. Altemeyer is the chairman of the Psychology Department's Subject Pool Committee. He always likes to see each subject in an experiment like this, to see if the experiment was too unpleasant for the subject, and so on. He is staying around his office today so he can talk to the subjects I am running now, and I am supposed to send you to him for a short interview when we finish here.

His office number is 509. [S was given instructions if necessary.]

By the way, you don't have to worry about getting me in trouble or anything if you did not enjoy the experiment. He will want to consider the students' reactions to this experiment when future

policies about the subject pool are being decided. But the results of the interviews won't affect me in any way, and they certainly won't affect you in any way. He will want your candid opinions, and I hope you will give them to him.

Post-Experimental Interview. When the subject arrived at Dr. Altameyer's office, she was, in addition to some informal conversation, given the following instructions:

Hi! What's your name? I'm Dr. Altameyer. As you probably know, I'm the chairman of the Subject Pool for the Department of Psychology, and I like to see each subject who has been in an experiment such as the one you have just participated in, to see if it was too unpleasant for the subjects, and so on. You won't have to worry about getting Bruce in trouble or anything like that if you didn't enjoy the experiment. We will want to consider subjects' reactions to this and other experiments when future policies about the subject pool are being decided, so please be frank in expressing your feelings about the experiment.

The first thing I would like you to do is to fill out this short questionnaire, just so I can be sure I know how each person feels, and not rely on my memory of what different people say.

Data from this questionnaire constituted the major dependent variable, and two manipulation checks. The first question asked Ss to rate how unpleasant the pictures were which they had seen in the recently completed experiment, on a seven point scale ranging from -3 ("extremely unpleasant") through 0 ("neutral") to +3 ("extremely pleasant"). Vertical lines and verbal labels appeared at -3, -2, -1, 0, +1, +2, and +3, with four dots separating each vertical line. This measure constituted the major dependent variable of the experiment. The second question asked Ss how free they had felt to stop looking at the pictures and end the experiment, on a four point scale ranging from 0 ("no freedom at all") to +3 ("complete freedom"). This question thus constituted a check on the volition manipulations. The third question was designed to serve as a check on the effectiveness of the reward manipulations, and asked Ss to rate how great the "mixed feelings" were which they had experienced while taking part in the experiment. This was done on a four point scale ranging from 0 ("no mixed feelings at all") to +3 ("greatly mixed feelings").

Volunteering for a "Similar Experiment." After S had completed the questionnaire (see Appendix I), Dr. Altemeyer informally interviewed S about the experiment, and then gave her the following instructions, depending upon what S's response had been to question one of the questionnaire:

Form A (used if S indicated that the task was not unpleasant):

I'm glad to see the pictures were not too unpleasant for you, especially since I promised

someone that I'd tell you about a similar study being run in the department now.

Form B (used if S indicated that the task was unpleasant):

I'm sorry that the pictures were so unpleasant for you. In light of what you've said, what I am going to say now will seem pretty strange, but I promised someone that I'd tell you about a similar study being run in the department now.

All sa were then given the following instructions:

You see, it turns out that if you wish, you can serve in another experiment on the same topic. There's another graduate student in our department, named Bill Donnegan, who is doing a little research on whether people get used to frightening pictures like the ones you just saw if they see lots of them, like 50 or 60. As I said, this is just a personal research project on Bill's part. It's nothing he has to do for a course or anything like that, and we do not allow people to use the subject pool for such minor projects. But the people who serve in Bruce's experiment, as you just did, are naturally good subjects for Bill's study, and I promised I would ask for volunteers among the people I interviewed today.

As I understand it, the experiment involves spending about 15 to 20 minutes looking at pictures very

much like the ones used in Bruce's study, and rating them. I know Bill would appreciate your help, but there's no credit given for it, and it's entirely up to you if you want to participate. Bill told me he could run anybody who could serve today, so if you agree to serve I'll just send you to his research room right now. But you really don't have to if you don't want to. It's entirely up to you.

If S refused to participate in "Bill Donnegan's experiment," Dr. Altmeyster then debriefed her with respect to the entire experiment, and asked for her assurance that she would not discuss the experiment with anyone for several weeks in order to avoid contamination of future subjects.

"Bill Donnegan's Experiment." If S did agree to participate in "Bill Donnegan's experiment," however, Dr. Altmeyster sent her to "Bill Donnegan's research room." When she arrived at the room, S found a confederate² playing the role of another volunteering S, waiting in the same room for Bill Donnegan's experiment to begin. The confederate attempted to strike up a casual conversation with the subject, and tried to determine if the (real) subject had any suspicions or hypotheses with respect to the entire experiment she had just participated in. For example, Ss were asked, "Did you think there was more to the

2

The part of the confederate was, at different times, assumed by four different girls drawn from Dr. Altmeyster's undergraduate social psychology course.

experiment than the experimenter told us? Sometimes they're pretty sneaky." "Did you think that going to see Dr. Altemeyer was still part of the experiment?" and "Do you think that this Bill Donnegan's experiment is still part of the original experiment?"—along with several other questions.

At the close of this interview, the confederate rated how suspicious each S had been, on an 11 point scale, where 0 indicated no suspicion at all, and 10 indicated that the S had been extremely suspicious, and had "seen through" the entire experiment.

After this short "inquiry," the confederate dehoaxed S, and asked for her assurance that she would not discuss the experiment with anyone for several weeks, again to avoid contamination of future subjects.

The second dependent variable in the study was thus whether or not S would commit herself to participating in a future "similar" experiment, and, if she did volunteer for that experiment, whether or not she actually showed up to participate in that experiment.

Results

Manipulation Checks

Volition Manipulation. The second item on the post-experimental questionnaire asked Ss to indicate how free they felt to leave the experimental situation after they had seen the sample pictures. The scale ranged from 0 ("no freedom at all") to +3 ("complete freedom"). This question then served as a check on the volition manipulation.

Insert Tables 1 and 2 about here

Table 1 gives the mean "perceived volition" score for each experimental condition. An analysis of variance of these mean scores (Table 2) indicated a large significant main effect for volition ($p/.01$). Thus, the High Volition Ss reported themselves as having significantly more freedom to leave the experiment before it was completed than did the Low Volition Ss. All of the Ss who kept their appointments for the experiment, however, did agree to complete the experimental task after the volition manipulation had been carried out.

Reward Manipulation. Question 2(b) on the post-experimental questionnaire was designed to serve as a check on the reward manipulation. It suggested that since there were both pleasant and unpleasant aspects to the experiment, Ss might have had mixed feelings while studying the pictures. Thus, they were asked to rate these "mixed feelings" on a four point scale ranging from 0 ("no mixed feelings at all") to +3 ("greatly mixed feelings").

Table 1

Mean Volition Score for Each
Experimental Condition^a

| Reward | Volition | |
|----------|----------|------|
| | High | Low |
| High | 2.87 | 1.97 |
| Moderate | 2.63 | 1.82 |
| Low | 2.82 | 1.76 |

^a
The larger the score, the greater the
perceived volition. Maximum score would
be 3.0.

Table 2

Analysis of Variance: Volition

| Source | df | MS | F |
|-------------|----|-------|--------|
| Volition | 1 | 15.40 | 26.90* |
| Reward | 2 | .23 | .40 |
| Interaction | 2 | .09 | .16 |
| Error | 66 | .57 | |

*
p/.01

Insert Tables 3 and 4 about here

The mean scores obtained from this question for each experimental group are presented in Table 3. Table 4 shows the results of an analysis of variance which was carried out with these means, and indicates that none of the F values thus obtained was significant. It was noted that many Ss had trouble understanding and responding to this question, thus casting doubt on this measure as a valid check of the reward manipulation.

Subject Suspiciousness

Thirty-eight Ss volunteered for "Bill Donnegan's experiment," and all of them showed up at the appropriate research room a few minutes later. During the course of their exchange with the confederate who was waiting in this room posing as another S, the real Ss were confronted by questions designed to elicit any suspicions they might have had with respect to the entire experiment. Subsequently, the confederate rated how suspicious each S had been on an 11 point scale, where 0 indicated no suspicion at all, and 10 indicated that the S had "seen through" the entire experiment. The average suspicion rating of these 38 Ss was .97, thus indicating that the confederates thought there was little suspicion among the Ss. Rewarded Ss were reported as being more suspicious on the average (1.17) than were nonrewarded Ss (0.33). This difference, however, was not significant. While the above data suggest that relatively little suspicion existed among Ss, other data, to be discussed later, indicate higher suspiciousness than

Table 3

Mean "Mixed Feelings" Score For
Each Experimental Condition^a

| Reward | Valition | |
|----------|----------|------|
| | High | Low |
| High | .75 | 1.15 |
| Moderate | 1.15 | 1.03 |
| Low | .67 | .43 |

^a The greater the score, the greater the perceived conflict (i.e., "mixed feelings"). Maximum score possible is 3.0.

Table 4

Analysis of Variance: Mixed Feelings

| Source | df | MS | F |
|-------------|----|------|------|
| Volition | 1 | 0.00 | 0.00 |
| Reward | 2 | 1.90 | 2.20 |
| Interaction | 2 | .70 | .81 |
| Error | 66 | .87 | |

Note: No F value is significant at the .05 level.

the confederate ratings have suggested.

Learning the Concept

After each S had completed the seven test trials in the initial phase of the experiment, she was asked to write down what she thought the theme was that she had been asked to learn. These responses indicated that 12 of the 72 Ss had failed to learn the "correct" theme which appeared in one of each pair of pictures. Of these 12 Ss, six had learned a secondary theme which coincided consistently with the "correct" theme, so that as far as the S knew she had correctly identified the concept. Of the six remaining Ss, none was "incorrect" on more than two of the seven trials. Thus, it was assumed that while each of these six Ss had not in fact learned an adequate theme, each of them could have perceived that she had learned a correct theme, since she had been correct on at least five of the seven trials. Since, for the purposes of this experiment, it was important only that each S perceived that she had learned the correct theme, nearly all or all of the Ss would seem to have fulfilled this requirement. With respect to the conditions the 12 "incorrect" Ss were in, no significant differential trend emerged.

It was noted that some Ss had difficulty in understanding the instructions for the concept-learning task, and the "cover story" not infrequently needed clarification. This indicated that a certain amount of confusion existed in some Ss with respect to the experimental task, and this may have contributed to the fact that some Ss learned the concept "incorrectly."

Ratings of the Task

The main dependent variable involved the scores obtained from question 1 on the post-experimental questionnaire. This question asked Ss to rate, on a seven point scale, how pleasant or unpleasant they had found the pictures used in the experiment. The scale ranged from -3 ("extremely unpleasant") through 0 ("neutral"), to +3 ("extremely pleasant"). Table 5 presents the mean "unpleasantness" score for each

Insert Tables 5 and 6 about here

experimental condition. That the pictures were in fact unpleasant for Ss is emphasized by the fact that no S rated the pictures any higher (i.e., more pleasant) than 0 ("neutral"), and the mean scores for experimental conditions ranged from -1.32 to -2.32.

An analysis of variance for these scores (Table 6) indicated no significant main effects, and an interaction which merely approached significance ($p/.10$).

Volunteering for a Similar Experiment

Whether or not Ss would volunteer for a "similar experiment," and subsequently whether or not they showed up for that experiment, constituted the secondary dependent variable in this study. Table 7 shows the number of subjects who volunteered to participate in "Bill Donnegan's experiment." All of the Ss who volunteered to participate

Insert Table 7 about here

in the "future experiment" did in fact appear at the appropriate room,

Table 5

Mean Unpleasantness Score For
Each Experimental Condition^a

| Reward | Volition | |
|----------|----------|-------|
| | High | Low |
| High | -1.93 | -2.32 |
| Moderate | -1.98 | -1.32 |
| Low | -1.79 | -2.03 |

^a
The more negative the score, the greater the
perceived unpleasantness. Scale ranged from +3
to -3.

Table 6

Analysis of Variance: Unpleasantness

| Source | df | MS | F |
|-------------|----|------|------|
| Volition | 1 | 0.00 | 0.00 |
| Reward | 2 | 1.36 | 2.18 |
| Interaction | 2 | 1.94 | 3.10 |
| Error | 66 | .62 | |

Note: No F value is significant at the .05 level.

Table 7

Number of Subjects Volunteering for a "Similar Experiment"
in Each Experimental Condition^a

| Reward | High | Low |
|----------|------|-----|
| High | 7 | 7 |
| Moderate | 8 | 7 |
| Low | 2 | 7 |

^a
N = 12 in each cell.

and thus there was no differential "drop-out" rate for the different experimental conditions.

Only in the High Volition, Low Reward condition did there seem to be a differential effect upon the number of Sp who volunteered. A chi square test, however, indicated that this difference was not significant ($\chi^2 = 2.46$, $df = 2$).

Discussion

Effectiveness of the Manipulations

The data presented in Tables 1 and 2 indicated that the volition manipulations were successful. That is, high volition Ss perceived themselves as having significantly more freedom to leave the experimental situation than did the low volition Ss.

Since in fact High Reward Ss received three dollars and forty-two cents on the average, Moderate Reward Ss one dollar and sixty-six cents, and Low Reward Ss nothing, it was expected that the High Reward Ss would have more mixed feelings, pre and con, about the experiment than would Moderate Ss, who in turn would have more mixed feelings than would Low Reward Ss. The purpose of the third question on the post-experimental questionnaire was to verify this expectation, and confirm that the conditions on which "incentive type" theories make their predictions did in fact exist. Results indicated, however, a tendency for rewarded Ss to have more mixed feelings about participating in the experiment than non-rewarded Ss was not significant. All other differences were also nonsignificant.

In general then, it would seem that the conditions regarding volition manipulation necessary for dissonance arousal to take place, did in fact exist. The effects of the reward manipulation, however, are more confusing. The post-experimental questionnaire offers no evidence to suggest that Ss in different reward conditions experienced differing amounts of "mixed feelings." However, as Golding and

Lichtenstein (1970) have pointed out, post-experimental questionnaires are highly suspect instruments, and it is often doubtful that they measure what they are designed to measure. It seems quite possible that question 2(b) of the post-experimental questionnaire did not in fact constitute a valid check of the reward manipulation (i.e., the reward manipulations may in fact have been successful in spite of the lack of verification from the post-experimental questionnaire). This interpretation is reinforced by the observation that Ss in general were confused as to what was being asked by question 2(b).

That post-experimental questionnaires are suspect instruments then, also casts some suspicion on the check of the volition manipulations. Thus, the possibility that the significant results obtained from question 2(a) are in fact due to, for example, demand characteristics present in the experiment (Orne, 1962) must be considered.

The Dependent Variables

Results indicated no significant differential trends in Ss' ratings of the "unpleasantness" of the experimental task. Thus, dissonance theory receives absolutely no support from the data produced by the post-experimental questionnaire.

While fewer Ss volunteered to participate in "Bill Donnegan's experiment" in the Low Reward, High Volition condition than in any other condition, this difference was not significant. (It is to be noted that, according to dissonance theory, this was the condition which should have elicited the greatest number of volunteering Ss.) Thus, "volunteering for a future similar experiment" failed to produce

any significant results in support of either dissonance theory or its opponents.

In general then, it would seem that the required volition manipulations for dissonance theory predictions were successful. While the results of the reward manipulations were more confusing, let us assume for the sake of argument that since Es did receive differential amounts of monetary reward, these manipulations were successful. Thus, assuming that both the reward and the volition manipulations were successful, dissonance theory and "incentive type" theories make directly opposing predictions in the present experiment. Neither of these opposing predictions is supported by the data produced by the dependent variables. This lack of supportive evidence for either of the preceding predictions could be due to one or more of many factors.

Interpretation and Suggestions

First, it is possible that cognitive dissonance theory, incentive theory, affective-cognitive consistency theory, and classical conditioning theory may be inadequate in making predictions in situations involving both affective and cognitive elements such as the one used in this experiment. All of the above theories emphasize cognitive rather than affective components of attitude change, and this may weaken their predictive abilities in situations emphasizing affective (as well as cognitive) elements. Since emotions involve rather "massive responses," it is quite possible that they are not subject to the neat and concise, but possibly fragile "balance" models proposed above. This would seem to suggest a need for further theoretical work with

respect to situations which involve important affective elements.

Several structural and methodological problems may also have contributed to the failure of the data in this study to support any of the above theories. For instance, as previously pointed out, some Ss had difficulty in understanding the instructions for the experimental task. The cover story in particular (i.e., that S was to learn to discern which of each pair of pictures contained a certain theme) not infrequently needed clarification. Thus, in future experimentation, a pilot study might enable a more concise and explicit set of instructions to be developed. Alternatively, since this specific cover story is not necessary to the experiment in general, perhaps a different cover story would eliminate these problems. Similarly, question 2(b) on the post-experimental questionnaire seemed to cause some confusion for some Ss, and further experimentation with semantics, etc., would seem desirable.

Subjects also displayed a great variability of responses to the unpleasant pictures used. Many Ss were visibly disturbed by the pictures, and were very hesitant about continuing the experiment, while other Ss showed few outward signs of disturbance, and some even voluntarily suggested that the pictures "didn't bother them at all" (although it is quite possible that this was merely triggered by an attempt to reduce their evaluation apprehension, or to reduce their anxiety). However, the unpleasantness of the pictures was felt to be very close to "ideal," since it caused many subjects to be quite hesitant about continuing the experiment, and yet no S did refuse to finish the

experiment. Future studies might investigate the possibility of finding a more uniformly emotion-arousing situation. For example, informing SS that they have just done very poorly on a simple test might more uniformly arouse negative affect among university SS. Also, since this study was confined to female SS, it might be pertinent to investigate sex differences in affect-arousing situations.

The use of monetary reward as a source of "pleasantness" in this experiment offered an ambiguous contribution. Some SS appeared quite embarrassed about being paid for such a simple task, and almost all SS were hesitant about accepting the money when they were ready to leave the research room. Several suggested to the confederate in the latter phase of the experiment, that they had expected the money to be taken away from them at the end of the experiment, and were in fact surprised when they were allowed to leave the experiment with the money. This would seem to indicate that subject suspicions may in fact have been somewhat greater than the ratings by the confederates indicated. This possibility is supported by research (Golding & Lichtenstein, 1970; Levy, 1967) which has indicated that large proportions of subjects in deception experiments may refuse to admit to any awareness or suspicion with respect to the experiment when they had, in fact, been given prior information concerning the experiment.

In addition to contributing to subject suspicion, the monetary reward may not have functioned as an effective arouser of positive affect, and may in fact have had the opposite effect with some SS. For instance, some SS were embarrassed at accepting money for such a "short,

simple experiment," while others seemed to feel guilt because they were, as one S suggested, "profiting from the suffering of little children." One suggestion might be to pay Ss less money for each correct choice in the experimental task, but to have them look at more sets of pictures, thus making the money more "reasonable" with respect to the experimental task. A second alternative might be to look to other methods of arousing positive affect, such as offering extra experimental credits for participating in this particular experiment, and so on.

Rosenberg (1965) has shown that contamination of data may result if the data was collected in the same situation as that in which the experiment was conducted in attitude change studies. Efforts were made in the present experiment to keep this "evaluation apprehension" to a minimum by keeping Ss from associating the interview with Dr. Altemeyer with the experiment in which they had just participated. The experimental laboratory used in the first phase of the experiment (i.e., "learning the concept") was separated from Dr. Altemeyer's office both physically (it took Ss several minutes to get from the laboratory to Dr. Altemeyer's office), and psychologically (every effort was made to convince Ss that the interview with Dr. Altemeyer was legitimate and in no way connected with the original experiment). The fact that Dr. Altemeyer was indeed the head of the Psychology Department's Subject Pool, the experiment was indeed much more unpleasant than most experiments, and the fact that Dr. Altemeyer conducted his interviews in a friendly and informal manner asking Ss about other experiments they had participated in, etc., all hopefully served to reduce any

evaluation apprehension which SS may have felt in taking part in the "interview," and to reinforce the cover story which was used.

However, in spite of these precautions, evaluation apprehension often appeared noticeable when SS appeared at Dr. Altemeyer's office for the post-experimental interview. Much of this apprehension might be further reduced by having a graduate student conduct the interview and administer the questionnaire, instead of an individual with the anxiety-arousing title of "assistant professor of psychology."

One further factor which may have influenced the results of this study is the fact that the experiment was conducted in the last three weeks of the "experimental year." Previous research (Adair, 1970) has suggested that this may have important consequences for the experimental data. The more eager and interested subjects may tend to sign up for experiments early in the academic year, while as the year progresses, SS with decreasingly positive attitudes towards psychological experiments and who still have not fulfilled their experimental credit requirements may tend to sign up for experiments. Since this experiment involved mainly the latter type of SS (the "dregs" of the Subject Pool), it is possible that none of the theories discussed earlier were supported simply because many SS were very disinterested in the experiment, and their attention was such that emotional arousal was minimal, or possibly some of these SS were deliberately (privately) uncooperative with respect to experimental instructions, etc.

In view of the failure of the results of this experiment to support either dissonance theory or opposing theories, and also in

light of the multiplicity of factors discussed above, which may have contributed to this failure, it is suggested that further research is necessary to delineate specifically which of these factors is relevant, and in what way, to the data in the present study. A great deal of further experimentation is necessary to define precisely what part emotions play in attitude formation and change.

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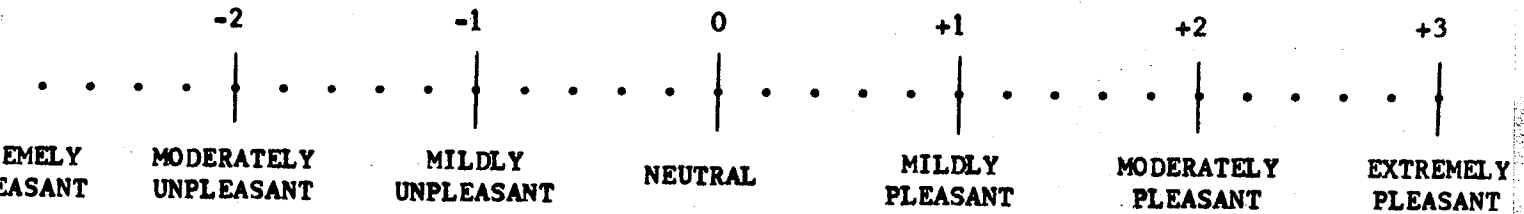
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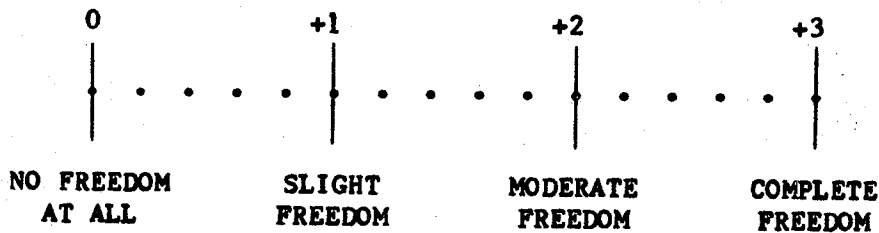
SUBJECT POOL QUESTIONNAIRE FOR "PROJECT EMO-CEPT"

1. Concerning the Pictures Used: In your opinion, how unpleasant were the pictures that were used in this experiment?



2. Concerning the Experiment in General:

(a) Once you had seen the sample pictures and had an idea of what the rest might be like, how free did you feel to stop looking at the pictures and end the experiment?



(b) Because the concept-formation task has both unpleasant and pleasant aspects to it, a person might have mixed feelings while studying the pictures. How mixed would you say your feelings were during this part of the experiment?

