

SELF-PERCEPTION: AN ALTERNATIVE INTERPRETATION OF COGNITIVE DISSONANCE PHENOMENA¹

DARYL J. BEM

Carnegie Institute of Technology

A theory of self-perception is proposed to provide an alternative interpretation for several of the major phenomena embraced by Festinger's theory of cognitive dissonance and to explicate some of the secondary patterns of data that have appeared in dissonance experiments. It is suggested that the attitude statements which comprise the major dependent variables in dissonance experiments may be regarded as interpersonal judgments in which the observer and the observed happen to be the same individual and that it is unnecessary to postulate an aversive motivational drive toward consistency to account for the attitude change phenomena observed. Supporting experiments are presented, and metatheoretical contrasts between the "radical" behavioral approach utilized and the phenomenological approach typified by dissonance theory are discussed.

If a person holds two cognitions that are inconsistent with one another, he will experience the pressure of an aversive motivational state called cognitive dissonance, a pressure which he will seek to remove, among other ways, by altering one of the two "dissonant" cognitions. This proposition is the heart of Festinger's (1957) theory of cognitive dissonance, a theory which has received more widespread attention from personality and social psychologists in the past 10 years than any other contemporary statement about human behavior. Only 5 years after its introduction, Brehm and Cohen (1962) could review over 50 studies con-

ducted within the framework of dissonance theory; and, in the 5 years since the appearance of their book, every major social-psychological journal has averaged at least one article per issue probing some prediction "derived" from the basic propositions of dissonance theory. In popularity, even the empirical law of effect now appears to be running a poor second.

The theory has also had its critics. Reservations about various aspects of the theory have ranged from mild (e.g., Asch, 1958; Bruner, 1957; Kelly, 1962; Osgood, 1960; Zajonc, 1960) to severe (Chapanis & Chapanis, 1964), and alternative interpretations have been offered to account for the results of particular studies (e.g., Chapanis & Chapanis, 1964; Janis & Gilmore, 1965; Lott, 1963; Rosenberg, 1965). No theoretical alternative to dissonance theory has been proposed, however, which attempts both to embrace its major phenomena and to account for some of the secondary patterns of results which have appeared in the supporting experiments but which were

¹This research was supported in part by Ford Foundation Grant 140055 to Carnegie Institute of Technology and in part by the Center for Research on Language and Language Behavior, University of Michigan, with funds from the Bureau of Higher Education Research, United States Office of Education. The author is grateful to George R. Madaras and Kenneth M. Peterson for aid in conducting the research and to Sandra L. Bem for critical comments on the manuscript.

not predicted by the theory. This article proposes such an alternative.

Like many theories in psychology, the theory of cognitive dissonance attempts to account for observed functional relations between current stimuli and responses by postulating some hypothetical process within the organism, in this case, an inferred process of the arousal and reduction of dissonance. Like many other contemporary personality and social psychological theories, dissonance theory is further characterized by an emphasis on the individual's current phenomenology; the explanatory account in the theory itself is ahistorical.

In contrast, the alternative formulation to be presented here eschews any reference to hypothetical internal processes and seeks, rather, to account for observed functional relations between current stimuli and responses in terms of the individual's past training history. Such an approach has been called "radical" behaviorism (see Scriven, 1956), a position most often associated with the name of B. F. Skinner. In analyzing a complex behavioral phenomenon, the radical behaviorist attempts to establish it as a special case of some previously substantiated functional relation discovered in the experimental analysis of simpler behaviors. His functional analysis is thus based on empirical generalization and, accordingly, is frankly inductive not only in its experimental execution, but in its formal presentation.

A functional analysis characteristically begins by inquiring into the ontogenetic origins of the observed dependent variable and attempts to ascertain the controlling or independent variables of which that behavior is a function. The present analysis of dissonance phenomena proceeds in the same way by noting first that the dependent variable in cognitive dissonance stud-

ies is, with very few exceptions, a subject's (*S*'s) self-descriptive statement of an attitude or belief. Indeed, this is the dependent variable in nearly all of contemporary social psychology. But how are such self-descriptive behaviors acquired? What are their controlling variables? It is to these questions that the analysis turns first.

SELF-PERCEPTION: A SPECIAL CASE OF INTERPERSONAL PERCEPTION

Self-perception, an individual's ability to respond differentially to his own behavior and its controlling variables, is a product of social interaction (Mead, 1934; Ryle, 1949; Skinner, 1957). Verbal statements that are self-descriptive are among the most common responses comprising self-perception, and the techniques employed by the community to teach its members to make such statements would not seem to differ fundamentally from the methods used to teach interpersonal perception in general. The community, however, does face severe limitations in training the individual to make statements describing internal events to which only he has direct access. Skinner (1953, 1957) has analyzed the limited resources available to the community for training its members thus to "know themselves," and he has described the inescapable inadequacies of the resulting knowledge.

Skinner suggests that some self-descriptions of internal stimuli can be learned through metaphor or stimulus generalization. The child, for example, can easily learn to describe "butterflies in the stomach" without explicit discrimination training. More often, however, a socializing community must teach the descriptive responses more directly. In training a child to describe pain, for example, the community, at some point, must teach him

the correct response at the critical time when the appropriate private stimuli are impinging upon him. But the community itself must necessarily identify the "critical time" on the basis of observable stimuli or responses and implicitly assume that the private stimuli are, in fact, accompanying these public events.

This analysis suggests that many of the self-descriptive statements that appear to be exclusively under the discriminative control of private stimuli may, in fact, still be partially controlled by the same accompanying public events used by the training community to infer the individual's inner states. Private stimuli may play a smaller role than the individual himself suspects. For example, by manipulating the external cues of the situation, Schachter and Singer (1962) were able to evoke self-descriptions of emotional states as disparate as euphoria and anger from *Ss* in whom operationally identical states of physiological arousal had been induced. It appears that these *Ss* utilized internal stimuli only to make the gross discrimination that they were emotional, but that the more subtle discrimination of *which* emotion they were experiencing was under the control of external cues.

A similar division of control between internal and external stimuli appears to operate in the domain of attitude statements. Osgood, Suci, and Tannenbaum (1957) theorize that a pattern of internal responses elicited by a word or an object comprises the connotative or "emotional" meaning of the stimulus for an individual, including his attitude toward it. Using the Semantic Differential technique, these investigators report that an individual's verbal descriptions of these hypothesized internal responses can be factor analyzed into a very small number of factors, factors which appear to have

extensive cross-cultural generality as well (Osgood et al., 1957). These findings, too, are consistent with the view that an individual is unable to make more than a small number of independent discriminations among stimuli that have never been publicly available to a socializing community, and it is suggested that the many subtle discriminations which individuals do make when describing their attitudes are based, rather, on the kinds of cues that are potentially available to an outside observer. In particular, it is suggested that self-descriptive attitude statements can be based on the individual's observations of his own overt behavior and the external stimulus conditions under which it occurs. A number of recent experimental studies provide support for this proposition.

Several studies have shown that an individual's belief and attitude statements can be manipulated by inducing him to role-play, deliver a persuasive communication, or engage in any behavior that would characteristically imply his endorsement of a particular set of beliefs (Brehm & Cohen, 1962; King & Janis, 1956; Scott, 1957, 1959). A recent experimental analysis of these phenomena of "self-persuasion" demonstrates that an individual bases his subsequent beliefs and attitudes on such self-observed behaviors to the extent that these behaviors are emitted under circumstances that have in the past set the occasion for telling the truth (Bem, 1965, 1966). For example, in one of three studies reported in Bem (1965), *Ss* were first trained to tell the truth in the presence of a colored light and to tell lies in the presence of another. Later in the experimental session, *Ss* were required to state attitudes with which they disagreed; one of the two colored lights was illuminated as each attitude statement was made. It was found that *Ss*

subsequently endorsed the attitude statements they had uttered in the presence of the "truth light" significantly more than attitude statements they had made in the presence of the "lie light"; the lights, in short, determined the degree to which *Ss* believed what they had heard themselves say. Furthermore, no *S* could report any awareness of the control exerted by his statements or the lights over his subsequent attitudes.

In another study, the same technique was employed to demonstrate that an individual can be induced to believe in "false confessions" he has made if there are external cues present that characteristically set the occasion for telling the truth (Bem, 1966). These several studies have also illustrated that the control over an individual's beliefs and attitudes exerted by his overt behavior is vitiated to the extent that cues are present implying that the behavior is deceitful or, more generally, is being emitted for immediate specific reinforcement. For example, just as a communicator is more persuasive to others if he is known to be receiving no payment for his communication, so too, it is found that he is more likely to believe himself under such circumstances (Bem, 1965). The effectiveness of self-persuasion can thus be altered by many of the techniques typically used to manipulate the credibility of any persuasive communicator.

The major implication of these findings is that, to the extent that internal stimuli are not controlling, an individual's attitude statements may be viewed as inferences from observations of his own overt behavior and its accompanying stimulus variables. As such, his statements are functionally similar to those that any outside observer could make about him. When the answer to the question, "Do you like brown bread?" is "I guess I do,

I'm always eating it," it seems unnecessary to invoke a fount of privileged self-knowledge to account for the reply. In such a case the reply is functionally equivalent to one his wife might give for him: "I guess he does, he is always eating it." Only to the extent that "brown bread" elicits strongly conditioned internal responses might he have additional evidence, not currently available to his wife, on which to base his self-descriptive attitude statement.

The present analysis of dissonance phenomena, then, will rest upon the single empirical generalization that an individual's belief and attitude statements and the beliefs and attitudes that an outside observer would attribute to him are often functionally similar in that both sets of statements are partial "inferences" from the same evidence: the public behaviors and accompanying stimulus cues upon which the socializing community has relied in training him to make such self-descriptive statements in the first place.

PHENOMENA OF DISSONANCE THEORY

The major phenomena of dissonance theory have been classified into three main categories (Brehm & Cohen, 1962, p. 21): (a) forced-compliance studies; (b) free-choice studies; and (c) exposure-to-information studies. Within each category, this discussion will treat the major functional relation predicted and subject the data from a single dissonance experiment to detailed analysis. Two sets of secondary findings will also be discussed.

Because the literature of dissonance theory has now become so large that it would be impossible to discuss all the experimental paradigms that have been employed, the specific experiments selected for detailed analysis had to satisfy certain criteria. First, when-

ever possible, they had to be illustrative of several others in the same category so that the applicability of the self-perception analysis to studies not explicitly discussed would be apparent. Second, for each experiment there had to be at least one other study in the literature that had successfully replicated the same conceptual phenomenon employing different experimental procedures if possible. These first two criteria together attempt to ensure that the analysis avoids "explaining" phenomena that are artifactual, while at the same time not requiring that the particular study under analysis be invulnerable to methodological criticism. Finally, the studies selected are those which are best known and most widely reprinted or cited.

There will be no discussion of studies that simply use the vocabulary of dissonance theory but which explore functional relations that are not derivations from the major propositions of the theory (e.g., studies of postdecision regret; Festinger, 1964). There will also be no additional discussion of phenomena which, although derivable from dissonance theory propositions, are already considered by the dissonance theorists themselves to be as parsimoniously accounted for by straightforward empirical generalizations concerning the interpersonal judgmental skills of *Ss* (e.g., attitude change phenomena produced by persuasive communication). (See Brehm & Cohen, 1962, pp. 105-111.) Indeed, the primary purpose of the present analysis is to extend this same kind of empirical generalization to the very phenomena that the dissonance theorists claim to be "entirely closed to the judgmental interpretation and rather unequivocally explainable by the dissonance formulation [Brehm & Cohen, 1962, p. 111]."

THE FORCED-COMPLIANCE STUDIES

The most frequently cited evidence for dissonance theory comes from an experimental procedure known as the forced-compliance paradigm. In these experiments, an individual is induced to engage in some behavior that would imply his endorsement of a particular set of beliefs or attitudes. Following his behavior, his "actual" attitude or belief is assessed to see if it is a function of the behavior in which he has engaged and of the manipulated stimulus conditions under which it was evoked. The best known and most widely quoted study of this type was conducted by Festinger and Carlsmith (1959). In their experiment, 60 undergraduates were randomly assigned to one of three experimental conditions. In the \$1 condition, *S* was first required to perform long repetitive laboratory tasks in an individual experimental session. He was then hired by the experimenter as an "assistant" and paid \$1 to tell a waiting fellow student (a stooge) that the tasks were enjoyable and interesting. In the \$20 condition, each *S* was hired for \$20 to do the same thing. Control *Ss* simply engaged in the repetitive tasks. After the experiment, each *S* indicated how much he had enjoyed the tasks. The results show that *Ss* paid \$1 evaluated the tasks as significantly more enjoyable than did *Ss* who had been paid \$20. The \$20 *Ss* did not express attitudes significantly different from those expressed by the control *Ss*.

Dissonance theory interprets these findings by noting that all *Ss* initially hold the cognition that the tasks are dull and boring. In addition, however, the experimental *Ss* have the cognition that they have expressed favorable attitudes toward the tasks to a fellow student. These two cognitions are dissonant for *Ss* in the \$1 condition be-

cause their overt behavior does not "follow from" their cognition about the task, nor does it follow from the small compensation they are receiving. To reduce the resulting dissonance pressure, they change their cognition about the task so that it is consistent with their overt behavior: they become more favorable toward the tasks. The *Ss* in the \$20 condition, however, experience little or no dissonance because engaging in such behavior "follows from" the large compensation they are receiving. Hence, their final attitude ratings do not differ from those of the control group.

In contrast with this explanation, the present analysis views these results as a case of self-perception. Consider the viewpoint of an outside observer who hears the individual making favorable statements about the tasks to a fellow student, and who further knows that the individual was paid \$1 (\$20) to do so. This hypothetical observer is then asked to state the actual attitude of the individual he has heard. An outside observer would almost certainly judge a \$20 communicator to be "manding" reinforcement (Skinner, 1957); that is, his behavior appears to be under the control of the reinforcement contingencies of the money and not at all under the discriminative control of the tasks he appears to be describing. The \$20 communicator is not credible in that his statements cannot be used as a guide for inferring his actual attitudes. Hence, the observer could conclude that the individual found such repetitive tasks dull and boring in spite of what he had said. Although the behavior of a \$1 communicator also has some mand properties, an outside observer would be more likely to judge him to be expressing his actual attitudes and, hence, would infer the communicator's attitude from the content of the communication itself. He would thus judge this

individual to be favorable toward the tasks. If one now places the hypothetical observer and the communicator into the same skin, the findings obtained by Festinger and Carlsmith are the result. There is no aversive motivational pressure postulated; the dependent variable is viewed simply as a self-judgment based on the available evidence, evidence that includes the apparent controlling variables of the observed behavior.

If this analysis of the findings is correct, then it should be possible to replicate the inverse functional relation between amount of compensation and the final attitude statement by actually letting an outside observer try to infer the attitude of an *S* in the original study. Conceptually, this replicates the Festinger-Carlsmith experiment with the single exception that the observer and the observed are no longer the same individual.

AN INTERPERSONAL REPLICATION OF THE FESTINGER-CARLSMITH EXPERIMENT

Seventy-five college undergraduates participated in an experiment designed to "determine how accurately people can judge another person." Twenty-five *Ss* each served in a \$1, a \$20, or a control condition. All *Ss* listened to a tape recording which described a college sophomore named Bob Downing, who had participated in an experiment involving two motor tasks. The tasks were described in detail, but nonevaluatively; the alleged purpose of the experiment was also described. At this point, the control *Ss* were asked to evaluate Bob's attitudes toward the tasks. The experimental *Ss* were further told that Bob had accepted an offer of \$1 (\$20) to go into the waiting room, tell the next *S* that the tasks were fun, and to be prepared to do this again in the future if they needed him. The *Ss* then listened to a brief conversation which they were told was an actual recording of Bob and the girl who was in the waiting room. Bob was heard to argue rather imaginatively that the tasks were fun and enjoyable, while the girl responded very

little except for the comments that Festinger and Carlsmith's stooge was instructed to make. The recorded conversation was identical for both experimental conditions in order to remain true to the original study in which no differences in persuasiveness were found between the \$1 and the \$20 communications. In sum, the situation attempted to duplicate on tape the situation actually experienced by Festinger and Carlsmith's Ss.

All Ss estimated Bob's responses to the same set of questions employed in the original study. The key question required Ss to rate the tasks (or for Bob's attitude toward them) on a scale from -5 to $+5$, where -5 means that the tasks were extremely dull and boring, $+5$ means they were extremely interesting and enjoyable, and 0 means they were neutral, neither interesting nor uninteresting.

Results

Table 1 shows the mean ratings for the key question given by Ss in all three conditions of both the original experiment and the present replication.

The results show that in both studies the \$1 and control conditions are on different sides of the neutral point and are significantly different from one another at the .02 level of significance ($t = 2.48$ in the original study; $t = 2.60$ in the replication).² In both studies, the \$1 condition produced significantly more favorable ratings toward the tasks than did the \$20 condition ($t = 2.22$, $p < .03$ in the original study; $t = 3.52$, $p < .001$ in the replication). In neither study is the \$20 condition significantly different from the control condition; and, finally, in neither study were there any significant differences between conditions on the other questions asked of Ss about the experiment. Thus, the inverse relation between amount of compensation and the final attitude rating is clearly replicated; and, even though the present analysis does not require the attitude judgments themselves of the inter-

² All significance levels in this article are based on two-tailed tests.

TABLE 1
ATTITUDE RATINGS AND INTERPERSONAL ESTIMATES OF ATTITUDE RATINGS TOWARD THE TASKS FOR EACH CONDITION

Study	Experimental condition		
	Control	\$1 compensation	\$20 compensation
Festinger-Carlsmith	-0.45	+1.35	-0.05
Interpersonal replication	-1.56	+0.52	-1.96

Note.—For the Festinger-Carlsmith study, $N = 20$ in each condition; for the Interpersonal replication study, $N = 25$ in each condition.

personal observers to duplicate those of Ss in the original experiment, it is seen that the two sets of ratings are quite comparable on the 10-point scales.

Since the above replication was conducted, Jones (1966) has reported a study in which Ss' attitudes and observers' judgments were compared directly in the same experiment. Again, the observers' judgments not only replicated the inverse functional relation displayed by the attitude statements of Ss themselves, but the actual scale positions of observers and Ss were again similar.

These successful replications of the functional relation reported by Festinger and Carlsmith provide support for the self-perception analysis. The original Ss may be viewed as simply making self-judgments based on the same kinds of public evidence that the community originally employed in training them to infer the attitudes of any communicator, themselves included. It is not necessary to postulate an aversive motivational drive toward consistency.

These interpersonal replications are illustrative of others which have been reported elsewhere (Bem, 1965). It has been shown that the present analysis applies as well to forced-compliance experiments which utilize compensa-

tions much smaller than \$20, to studies which manipulate variables other than the amount of compensation, and to studies which evoke different behaviors from *S*. Alternative dependent variables have also been considered. For example, Brehm and Cohen show that *S*'s rating of how hungry he is can be manipulated by inducing him to volunteer to go without food for different amounts of compensation (1962, pp. 132-137), and a successful interpersonal replication of that experiment again supports the present self-perception analysis of these forced-compliance phenomena (Bem, 1965).

The merits of alternative formulations to an established theory are often sought in their ability to explicate functional relations about which the original theory must remain mute. Accordingly, the analysis now turns to a pattern of related findings which have not been adequately accommodated by dissonance theory: the observed relationships between the *amount* of behavior evoked from *S* in a forced-compliance setting and his final attitude statements.

A number of forced-compliance experiments have demonstrated that the differential effects of the stimulus manipulations on attitude statements can be obtained even before any of the behavior to which the individual has committed himself is actually emitted (Brehm & Cohen, 1962, pp. 115-116). That is, the behavior of volunteering to emit the behavior is sufficient to control the individual's subsequent self-judgment of attitude. (The self-perception interpretation of this effect has also been confirmed by an interpersonal replication, Bem, 1965.) In fact, in an experiment in which *Ss* volunteered to write essays against their initial opinions, Rabbie, Brehm, and Cohen (1959) report that the mean of attitude ratings obtained before the essays

were actually written was not significantly different from the mean of attitude ratings obtained after the essays were written. But the variance across *Ss* was much greater in the latter case. That is, actually writing the essays increases *and* decreases the initial effect of volunteering. In addition, there was a negative relationship between the number of arguments *S* wrote and the degree to which his final attitude statement agreed with the position advocated in the essay. On the other hand, Cohen, Brehm, and Fleming (1958) report a positive relationship between "original arguments" and amount of attitude change, but this relationship appeared in only one of the experimental conditions. Unpublished data from the Festinger-Carlsmith experiment show a negative correlation in one condition between attitude ratings and "number and variety" of arguments and a positive correlation in the other (reported by Brehm & Cohen, 1962, p. 119). Finally, when *Ss* themselves rate the quality of their persuasive communications, the confusion is further compounded. Brehm and Cohen conclude that "the role of discrepant verbal behavior in the arousal and reduction of dissonance remains unclear [p. 121]." How might the self-perception analysis treat these effects?

If an outside observer begins with the discrimination that a communicator is credible, then the more arguments put forth, the more persuasive the speaker might well become, if nothing intervenes to change the observer's judgment of the communicator's credibility. If, however, the observer discriminates the communicator as manding reinforcement, then it seems likely that the more insistent the speaker becomes in pushing his point of view, the more it appears to the observer that he "doth protest too much," and the less

likely it is that the speaker's statements will be taken to express his "actual" attitudes.

Now consider the self-observer. If *Ss* in the dissonance experiments begin with the discrimination that they are not manding (*Ss* in the low compensation conditions, for example), then the more arguments they put forth, the more self-persuasive they might become. For any given *S*, however, presenting a communication counter to his initial position might itself provide him with the cues that he is manding and hence destroy the initial effect of volunteering under nonmand conditions; he will become less self-persuasive as he continues. This analysis, then, leads one to expect the increased variability in postessay as compared to pre-essay measures of attitude. It is equally clear, however, that to confirm this analysis, the hypothesized discrimination of credibility must be brought under experimental control rather than being left under the control of the unique past histories of individual *Ss*. To do this, the Festinger-Carlsmith experiment is again used as an illustrative example.

AN EXTENDED INTERPERSONAL REPLICATION OF THE FESTINGER-CARLSMITH EXPERIMENT

Festinger and Carlsmith found that within the \$1 condition, the greater the number and variety of arguments stated by *S* about the tasks, the more favorable his final evaluation was of them. Within the \$20 condition, however, the greater the number and variety of arguments, the less favorable his final rating. The following study thus seeks to replicate this pattern of results with interpersonal observers.

Method

In the earlier replication, the persuasive communication heard by *Ss* was iden-

tical for both conditions. All *Ss* heard the speaker present a fairly imaginative and lengthy set of reasons as to why he had enjoyed the tasks. For the present extension, a second communication was designed, which was somewhat shorter and contained comparatively unimaginative arguments. The replication was then rerun on an additional 50 *Ss* assigned either to a \$1 or a \$20 condition. The *Ss* were again asked to estimate the actual attitude of the speaker. Thus, except for the length and variety of arguments in the communication, this replication is identical with the earlier one. The total design, then, contains four experimental groups: \$1-long communication, \$1-short communication, \$20-long communication, and \$20-short communication.

If the present analysis is correct, then within the \$1 condition, where the communicator is more likely to be perceived as credible, the long communication should lead interpersonal observers to infer that the communicator enjoyed the tasks more than the short communication would. Within the \$20 condition, however, the long communication should be *less* persuasive than the short one; the longer the speaker carries on, the harder he appears to be trying to earn his \$20. He "doth protest too much." Thus, an interaction effect is predicted between the two variables of communication length and amount of compensation. It will be noted that this is equivalent to saying that the "dissonance" effect, the inverse functional relation between compensation and attitude change, is itself a function of communication length. The shorter the communication, the smaller the inverse relationship should become, perhaps even reversing itself at very short communication lengths.

Results

Tables 2 and 3 display the results and their analysis, respectively. It will be recalled that scores can range from -5 to +5, the higher the score, the more favorable the communicator is judged to be toward the tasks.

It is seen that the interpersonal interpretation of self-perception is supported by these results. By employing attitude estimates of outside observers, the study has replicated Festinger and Carlsmith's positive correlation between

TABLE 2

INTERPERSONAL ESTIMATES OF ATTITUDE RATINGS TOWARD THE TASKS

Experimental condition	Long communication	Short communication
\$1 compensation	+0.52	-1.04
\$20 compensation	-1.96	-0.64

Note.— $N = 25$ in each cell.

number of arguments and attitude change within the \$1 condition and the negative correlation between these two variables within the \$20 condition. The main effect of compensation seen in Tables 2 and 3 is, of course, the primary "dissonance" effect reported earlier. As also noted earlier, however, the "dissonance" effect is itself a function of communication length, and the main effect is due entirely to the inverse relation appearing in the conditions employing the long communication, the communication designed to duplicate these found in the original Festinger-Carlsmith experiment. A nonsignificant reversal actually appears when very short communications are employed. It may be that communication length is thus one of the confounding parameters responsible for the conflicting findings, including reversals, reported in forced-compliance experiments, a point noted by Aronson (1966). If this is so, then the present conceptualization might provide a rec-

TABLE 3

SUMMARY OF ANALYSIS OF VARIANCE OF INTERPERSONAL ESTIMATES OF ATTITUDE RATINGS TOWARD THE TASKS

Source of variation	Sum of squares	df	Mean square	F
Long versus Short	0.360	1	0.360	0.05
\$1 versus \$20	27.040	1	27.040	4.07*
Interaction	51.840	1	51.840	7.80**
Within cells	637.920	96	6.645	

* $p < .05$

** $p < .01$

onciliation of the conflicting predictions made by a reinforcement theory (e.g., Scott, 1957, 1959), "incentive" theories (Janis & Gilmore, 1965), and dissonance theory within a single theoretical framework (cf. Bem, 1965).

NONVERBAL DEPENDENT VARIABLES

Both dissonance theory and the present analysis can be characterized as dealing with cognitions, attitudes, beliefs, or self-descriptive statements as the dependent variables. There is, however, a long history of evidence demonstrating that an individual's beliefs and attitudes can function as antecedent or independent variables as well, exercising partial control not only over his instrumental and consummatory behaviors, but over many of his physiological responses as well. Accordingly, the same "dissonance" manipulations that can produce attitude change should be expected to produce changes in some of these nonverbal behaviors too, an expectation that has now been well confirmed (e.g., Brehm, Back, & Bogdonoff, 1964; Brock & Grant, 1963; Cohen, Greenbaum, & Mansson, 1963; Freedman, 1965; Zimbardo, Cohen, Weisenberg, Dworkin, & Firestone, 1966). It should be clear, however, that, although either theory could claim to anticipate these "noncognitive" effects, neither formulation contains the theoretical machinery for "explaining" them in any nontrivial sense; this is especially true for the striking physiological effects (e.g., Zimbardo et al., 1966). In addition, Weick (in press) has persuasively argued that the apparent motivational effects of dissonance manipulations on the intensity of nonverbal instrumental behavior often fail to show the predicted attitude change that should accompany such effects and that these effects are more parsimoniously accounted for by

propositions drawn from frustration theory and cue-utilization theory.

In sum, it is suggested that the interpersonal model of self-perception provides a viable alternative to the theory of cognitive dissonance in accounting for the attitudinal phenomena that have emerged from the forced-compliance experiments.

THE FREE-CHOICE STUDIES

In the second major category of data on dissonance theory, an *S* is permitted to make a selection from a set of objects or courses of action. The dependent variable is his subsequent attitude rating of the chosen and rejected alternatives. Dissonance theory reasons that any unfavorable aspects of the chosen alternative and any favorable aspects of the rejected alternatives provide cognitions that are dissonant with the cognition that the individual has chosen as he did. To reduce the resulting dissonance pressure, the individual exaggerates the favorable features of the chosen alternative and plays down its unfavorable aspects. This leads him to enhance his rating of the chosen alternative. Similar reasoning predicts that he will lower his rating of the rejected alternatives. These predictions are confirmed in a number of studies. (See Brehm & Cohen, 1962, p. 303; see also Festinger, 1964).

A number of secondary predictions concerning parameters of the choice have also been confirmed. In an experiment by Brehm and Cohen (1959), school children were permitted to select a toy from either two or four alternatives. Some children chose from qualitatively similar toys; others chose from qualitatively dissimilar alternatives. The children's postchoice ratings of the toys on a set of rating scales were then compared to initial

ratings obtained a week before the experiment. The main displacement effect appeared as predicted: Chosen toys were displaced in the more favorable direction; rejected toys were generally displaced in the unfavorable direction. In addition, however, the displacement effect was larger when the choice was made from the larger number of alternatives. This is so, according to dissonance theory, because "the greater the number of alternatives from which one must choose, the more one must give up and consequently the greater the magnitude of dissonance [p. 373]." Similarly, the displacement effect was larger when the choice was made from dissimilar rather than similar alternatives because "what one has to give up relative to what one gains increases [p. 373]," again increasing the magnitude of the dissonance experienced.

To interpret these findings within the framework of self-perception, consider an observer trying to estimate a child's ratings of toys; the observer has not seen the child engage in any behavior with the toys. Now compare this observer with one who has just seen the child select one of the toys as a gift for himself. This comparison parallels, respectively, the prechoice and the postchoice ratings made by the children themselves. It seems likely that the latter observer would displace the estimated ratings of the chosen and rejected alternatives further from one another simply because he has some behavioral evidence upon which to base differential ratings of these toys. This is the effect displayed in the children's final ratings.

The positive relation between the number of alternatives and the displacement effect can be similarly analyzed. If an observer had seen the selected toy "win out" over more competing alternatives, it seems reasonable

that he might increase the estimated displacement between the "exceptional" toy and the group of rejected alternatives. Finally, the fact that the displacement effect is larger when the alternatives are dissimilar would appear to be an instance of simple stimulus generalization. That is, to the extent that the chosen and rejected alternatives are similar to one another, they will be rated closer together on a scale by any rater, outside observer, or the child himself.

In sum, if one regards the children as observers of their own choice behavior and their subsequent ratings as inferences from that behavior, the dissonance findings appear to follow. The following demonstration illustrates the point.

AN INTERPERSONAL REPLICATION OF THE TOY STUDY

Twenty-four college students served as control *Ss* by estimating how an 11-year-old boy might rate several different toys. These toys were selected from the list reported by Brehm and Cohen (1959) and were rated on the same rating scales. The toys to be rated in the subsequent experiment were then selected on the basis of these ratings according to the same criteria of selection employed by the original investigators.

For the experiment itself, 96 college stu-

dents were given a sheet of paper with the following information: "In a psychology experiment, an 11-year-old boy was asked to rate how well he liked toys that are typically popular with this age group. He was then permitted to select one of these toys to keep for himself. We are interested in how well college students can estimate his ratings." Each sheet also informed *S* which toy the child had chosen and from which alternatives he was permitted to choose. He then made his estimates of the child's ratings. The *Ss* were randomly assigned to one of four conditions corresponding to the combinations of number of alternatives (two or four) and similarity of alternatives (similar or dissimilar).

Results

Table 4 lists the toys employed, the control group means, and the displacements from those means of the corresponding experimental group means for the chosen and rejected alternatives in each condition. Scores can range from 0 to 5, where a higher number indicates greater liking for the toy; a positive displacement indicates increased liking for the toy. To facilitate comparisons among conditions, the toy rated as most popular by the control group, the swimming snorkel, was employed as the "chosen" toy in all experimental conditions. In addition, it will be noted that it was possible to

TABLE 4
MEAN DISPLACEMENT IN TOY RATINGS FROM CONTROL GROUP MEANS FOR
CHOSEN AND REJECTED ALTERNATIVES IN EACH CONDITION

Experimental condition		Similar alternatives			Dissimilar alternatives		
		Toy	Control	Displacement	Toy	Control	Displacement
Two alternatives	Chosen	Swimming snorkel	3.45	+ .35	Swimming snorkel	3.45	+ .22
	Rejected	Swimming mask	3.44	- .39	Archery set	2.79	- .42
Four alternatives	Chosen	Swimming snorkel	3.45	+ .69	Swimming snorkel	3.45	+ .99
		Swimming mask			Archery set		
	Rejected	Swimming fins	2.54	- .01	Bowling game	2.58	- .26
		Life jacket			Ship model		

Note.—*N* = 24 in the control and each experimental condition.

match closely the combined mean ratings of the rejected alternatives in the four-alternative conditions; unfortunately this could not be done for the two-alternative conditions.

It is seen in Table 4 that the chosen alternative was rated higher and the rejected alternatives were rated lower than the corresponding control group means in every condition. In both of the two-alternative conditions, the total displacement effect is significant at the .01 level ($t = 3.66$ and 2.81 for the similar and dissimilar conditions, respectively); for both of the four-alternative conditions, it is significant at the .001 level ($t = 5.26$ and 9.18 , respectively). Some of the downward displacement of the rejected alternatives in the two-alternative conditions can be attributed to regression effects since the initial means of these alternatives are above the grand mean, but this problem has been avoided in the four-alternative conditions by combining the ratings of the three rejected alternatives; in this case the predicted displacement effect is opposite in direction to that due to regression, as is the upward displacement of the chosen alternative in all four conditions. Thus, the main displacement effect is clearly replicated by interpersonal judgments.

Similarity of alternatives. From simple considerations of stimulus generalization, it was predicted that the displacement effect should be greater in the dissimilar than in the similar conditions. Because of the differential effects of regression, mentioned above, however, the analysis must be confined to the four-alternative conditions where it was possible to match the control group means of the rejected alternatives. Within this condition, the mean total displacement is .70 in the similar condition and 1.25 in the dissimilar condition, a difference significant at the .05 level ($t = 2.22$). The hypothe-

sis is confirmed insofar as it is possible to test it with these data.

Number of alternatives. The present experiment is attempting to replicate the positive relation found between the displacement and the number of alternatives. Again, the displacements of the rejected alternatives in the two-alternative conditions cannot be legitimately incorporated into the comparison. The present analysis, therefore, is confined to the upward displacement of the chosen alternative. For the four-alternative conditions, the mean upward displacement of the swimming snorkel is seen to be .84; for the two-alternative conditions, it is .28. This difference is significant at the .01 level ($t = 3.29$). The dissonance findings are again replicated by interpersonal observers.

Although it would have been desirable to test the predictions unconfounded by the noncomparability of the two-alternative base lines, this would have required departing from the toys employed in the original experiment. More importantly, however, this would still not have yielded a more direct comparison between the replication and the original experiment because the results reported by Brehm and Cohen are themselves confounded by uncorrected regression effects. The present replication actually provides clearer evidence for the predicted effects than the original study.

It is suggested that this same kind of analysis can be applied to the other studies in this category of dissonance experiments. Once again, it seems unnecessary to invoke a motivational construct to account for the data.

EXPOSURE-TO-INFORMATION STUDIES

The third category of dissonance studies includes two general paradigms: experiments in which an indi-

vidual is involuntarily exposed to information that is discrepant with information he already possesses, and studies that examine an individual's willingness to expose himself voluntarily to dissonant information.

An experiment of the first type in which male *S*s received information discrepant with their "self-images" was conducted by Bramel (1962). Each *S* was first led to view himself favorably or unfavorably on a number of personality characteristics and then given information that implied that he was sexually aroused by homoerotic pictures. This information was in the form of numerical readings from a meter which was supposedly measuring *S*'s sexual arousal to the stimulus pictures; actually, all *S*s received the same meter readings. The dependent variable of the study was *S*'s prediction of the meter readings that were obtained from his "partner," another male *S* who was participating in the experiment concurrently.

Bramel reasons from dissonance theory that the arousal information would be quite dissonant for *S*s who had been led to view themselves favorably. In order to reduce this dissonance, these *S*s would "project" or attribute a higher amount of homosexual arousal to their partners than would *S*s in the Unfavorable condition, who would find the information less dissonant with their self-image. The results are consistent with this prediction. The data show that the higher *S*'s measured self-esteem, the more arousal he attributed to his partner.

This study may be reanalyzed by considering the nature of the task set *S*. He is asked to make a comparative judgment of another person along a numerical scale. His only standard of reference is his own meter reading. In addition, he knows that high meter readings are to be associated with a

negative attribute, and he can again use himself as the reference for a standard of "good" and "bad." It would appear to follow that the more an *S* judges himself as "good," the higher an arousal number, relative to his own, he would assign to another person on whom he has no additional data, precisely the relationship reported by Bramel.⁸

This straightforward "psychophysical" interpretation is further supported by the observed relationship between *S*'s prediction of his partner's arousal and his overall evaluation of the partner which he had made prior to receiving the experimental manipulation. A simple "halo effect" is evident: *S*s attribute high readings to partners toward whom they had generally unfavorable attitudes; they attribute moderate readings to moderately esteemed partners; and, with one exception, they attribute low readings to highly esteemed partners. This monotonic relation is violated at only one point: *S*s who have high self-esteem appear to use their own meter reading as a lower bound of "goodness" and simply assign a similar level of arousal to partners whom they also regard favorably. This finding, too, is consistent with the judgmental interpretation of Bramel's data.

A number of other experiments examine the effects of giving *S*s information that is dissonant with their self-images. Unfortunately, the more remarkable effects (e.g., Aronson & Carlsmith, 1962) are apparently difficult to reproduce, and it is still possible that the original findings are artifactual. (See McGuire, 1966, for a review.)

Throughout this discussion, it has

⁸ Bramel briefly considers a similar interpretation, but rejects it in favor of the dissonance interpretation.

been argued that the data under analysis could be accounted for without postulating an aversive motivational drive. The second kind of exposure-to-information studies may be viewed as a direct test for the existence of such a drive. If cognitive dissonance is, in fact, an aversive state, then a person should avoid exposure to sources of dissonant information and seek out nondissonant sources. Compared with the theoretical chain of reasoning behind the other studies discussed, this deduction from dissonance theory is by far the most direct, the easiest to test, and the most crucial for justifying a motivational construct like dissonance. The available evidence, however, is not supportive. In an extensive review of the relevant studies, most of which were conducted by investigators whose theoretical orientation would lead them to look for selective exposure to nondissonant information, Freedman and Sears (1965) conclude that "clearly experimental evidence does not demonstrate that there is a general psychological tendency to avoid nonsupportive and to seek out supportive information."

There is, of course, nothing within the behaviorist's functional framework that would rule out a motivational phenomenon. For example, it is not implausible to suppose that punishment is often contingent upon being inconsistent, illogical, or just plain wrong in our highly verbal culture. This would be particularly true for the college students who typically serve as Ss in cognitive dissonance experiments. Accordingly, evidence demonstrating that it is aversive for such Ss to maintain incompatible responses in their verbal repertoires might well be forthcoming. Such a phenomenon is appropriately labeled motivational, but it would be the consequence of a particularly common cultural practice and would not,

it is suggested, justify the reification of a new internal drive that is assumed to be an inherent characteristic of behaving organisms. In any case, the assumption of any motivational process to account for the data reviewed in this discussion would seem gratuitous.

SOME METATHEORETICAL CONSIDERATIONS

In the opening remarks, some contrasts were noted between the conceptual approach typified by dissonance theory and the behavioral approach represented here by the functional analysis of self-perception. It was pointed out that the behaviorist's goal is to account for observed relations between current stimuli and responses in terms of an individual's past training history and a small number of basic functional relations discovered in the experimental analysis of simpler behaviors. The behaviorist's functional analysis of complex behaviors like dissonance phenomena was thus seen to be based on empirical generalization, a feature which infuses it with an inductive flavor and spirit.

In contrast, the dissonance theorists clearly prefer the "deductive" nature of their theory and explicitly derogate the "weakness of an empirical generalization as compared with a true theoretical explanation [Lawrence & Festinger, 1962, p. 17]." This criticism of the behaviorist's functional analysis, namely, that it has no deductive fertility or predictive power, is often expressed. The radical behaviorist, so the criticism goes, will not venture a specific prediction without knowing the complete reinforcement history of the organism. He cannot provide a "true theoretical explanation."

It is suggested here that a functional analysis appears to have limited predictive power only because it makes

explicit the kinds of knowledge about the past and present controlling variables that any theorist must have if he is to predict behavior accurately. How, for example, do the dissonance theorists conclude that dissonance is present in a particular case? That is, how do they decide when one cognition does not "follow from" another? According to Festinger, "the vagueness in the conceptual definition of dissonance—namely, two elements are dissonant if, considered alone, the obverse of one follows from the other—lies in the words 'follows from'. . . . One element may follow from another because of logic, because of cultural mores, because of things one has experienced and learned, and perhaps in other senses too [1957, p. 278]." Five years later, Brehm and Cohen note that "the 'follows from' relationship can sometimes be determined empirically but is limited by our abilities to specify and measure cognitions and the relationships among them . . . the 'follows from' relationship is not always clear and specifiable [1962, pp. 11-12]."

In actual practice, however, the dissonance theorists do not experience difficulty in inferring the existence of dissonance from their stimulus operations. But this is so precisely because in that inference the dissonance theorists sneak through the back door the very knowledge they claim to do without. It is in that inference that they implicitly make use of the fact that they have been raised by the same socializing community as their Ss. The dissonance theorists can thus infer that a \$1 compensation will produce more dissonance than a \$20 compensation, just as it has been our common history with these same Ss that permits us to speculate that the difference in compensation represents a difference in the mand properties of the induced behavior. Interpersonal observers are

successful in replicating dissonance phenomena for the same reason. Dissonance theorists and radical behaviorists need the same kinds of knowledge. Only the behaviorists, however, take as their explicit obligation the necessity for accounting for both their own and their Ss' differential response to such controlling variables.

In sum, it is concluded that the greater "deductive fertility" of dissonance theory is largely illusory. In the process of adequately explicating the phrase "follows from" in their fundamental statement, the dissonance theorists will necessarily have to perform the explicit functional analysis they had hoped to finesse. It remains our conviction that the appeal to hypothetical internal states of the organism for causal explanations of behavior is often heuristically undesirable. Such diversion appears only to retard and deflect the thrust of the analysis that is ultimately required.

REFERENCES

- ARONSON, E. The psychology of insufficient justification: An analysis of some conflicting data. In S. Feldman (Ed.), *Cognitive consistency: Motivational antecedents and behavioral consequents*. New York: Academic Press, 1966. Pp. 109-133.
- ARONSON, E., & CARLSMITH, J. M. Performance expectancy as a determinant of actual performance. *Journal of Abnormal and Social Psychology*, 1962, 65, 178-182.
- ASCH, S. E. Review of L. Festinger, *A theory of cognitive dissonance*. *Contemporary Psychology*, 1958, 3, 194-195.
- BEM, D. J. An experimental analysis of self-persuasion. *Journal of Experimental Social Psychology*, 1965, 1, 199-218.
- BEM, D. J. Inducing belief in false confessions. *Journal of Personality and Social Psychology*, 1966, 3, 707-710.
- BRAMEL, D. A dissonance theory approach to defensive projection. *Journal of Abnormal and Social Psychology*, 1962, 64, 121-129.
- BREHM, J. W., & COHEN, A. R. Re-evaluation of choice alternatives as a function

- of their number and qualitative similarity. *Journal of Abnormal and Social Psychology*, 1959, **58**, 373-378.
- BREHM, J. W., & COHEN, A. R. *Explorations in cognitive dissonance*. New York: Wiley, 1962.
- BREHM, M. L., BACK, K. W., & BOGDONOFF, M. D. A physiological effect of cognitive dissonance under stress and deprivation. *Journal of Abnormal and Social Psychology*, 1964, **69**, 303-310.
- BROCK, T. C., & GRANT, L. D. Dissonance, awareness, and motivation. *Journal of Abnormal and Social Psychology*, 1963, **67**, 53-60.
- BRUNER, J. S. Discussion of L. Festinger, The relationship between behavior and cognition. In J. S. Bruner (Ed.), *Contemporary approaches to cognition*. Cambridge: Harvard University Press, 1957. Pp. 151-156.
- CHAPANIS, N. P., & CHAPANIS, A. Cognitive dissonance: Five years later. *Psychological Bulletin*, 1964, **61**, 1-22.
- COHEN, A. R., BREHM, J. W., & FLEMING, W. H. Attitude change and justification for compliance. *Journal of Abnormal and Social Psychology*, 1958, **56**, 276-278.
- COHEN, A. R., GREENBAUM, C. W., & MANSOON, H. H. Commitment to social deprivation and verbal conditioning. *Journal of Abnormal and Social Psychology*, 1963, **67**, 410-421.
- FESTINGER, L. *A theory of cognitive dissonance*. Stanford: Stanford University Press, 1957.
- FESTINGER, L. *Conflict, decision and dissonance*. Stanford: Stanford University Press, 1964.
- FESTINGER, L., & CARLSMITH, J. M. Cognitive consequences of forced compliance. *Journal of Abnormal and Social Psychology*, 1959, **58**, 203-210.
- FREEDMAN, J. L. Long-term behavioral effects of cognitive dissonance. *Journal of Experimental Social Psychology*, 1965, **1**, 103-120.
- FREEDMAN, J. L., & SEARS, D. O. Selective exposure. In L. Berkowitz (Ed.), *Advances in experimental social psychology*. Vol. 2. New York: Academic Press, 1965. Pp. 57-97.
- JANIS, I. L., & GILMORE, J. B. The influence of incentive conditions on the success of role playing in modifying attitudes. *Journal of Personality and Social Psychology*, 1965, **1**, 17-27.
- JONES, R. G. Forced compliance dissonance predictions: obvious, non-obvious, or non-sense? Paper read at American Psychological Association, New York, September 1966.
- KELLY, G. Comments on J. Brehm, Motivational effects of cognitive dissonance. In M. R. Jones (Ed.), *Nebraska symposium on motivation: 1962*. Lincoln: University of Nebraska Press, 1962. Pp. 78-81.
- KING, B. T., & JANIS, I. L. Comparison of the effectiveness of improvised vs. non-improvised role-playing in producing opinion change. *Human Relations*, 1956, **9**, 177-186.
- LAWRENCE, D. H., & FESTINGER, L. *Deterrents and reinforcement*. Stanford: Stanford University Press, 1962.
- LOTT, B. E. Secondary reinforcement and effort: Comment on Aronson's "The effect of effort on the attractiveness of rewarded and unrewarded stimuli." *Journal of Abnormal and Social Psychology*, 1963, **67**, 520-522.
- MEAD, G. H. *Mind, self, and society*. Chicago: University of Chicago Press, 1934.
- MCGUIRE, W. J. Attitudes and opinions. *Annual Review of Psychology*, 1966, **17**, 475-514.
- OSGOOD, C. E. Cognitive dynamics in human affairs. *Public Opinion Quarterly*, 1960, **24**, 341-365.
- OSGOOD, C. E., SUCI, G. J., & TANNENBAUM, P. H. *The measurement of meaning*. Urbana: University of Illinois Press, 1957.
- RABBIE, J. M., BREHM, J. W., & COHEN, A. R. Verbalization and reactions to cognitive dissonance. *Journal of Personality*, 1959, **27**, 407-417.
- ROSENBERG, M. J. When dissonance fails: On eliminating evaluation apprehension from attitude measurement. *Journal of Personality and Social Psychology*, 1965, **1**, 28-42.
- RYLE, G. *The concept of mind*. London: Hutchinson, 1949.
- SCHACHTER, S., & SINGER, J. Cognitive, social, and physiological determinants of emotional state. *Psychological Review*, 1962, **69**, 379-399.
- SCOTT, W. A. Attitude change through reward of verbal behavior. *Journal of Abnormal and Social Psychology*, 1957, **55**, 72-75.
- SCOTT, W. A. Attitude change by response reinforcement: Replication and extension. *Sociometry*, 1959, **22**, 328-335.
- SCRIVEN, M. A study of radical behaviorism. In H. Feigl & M. Scriven (Eds.),

- Minnesota studies in philosophy of science.*
Vol. 1. *Foundations of science and the concepts of psychology and psychoanalysis.* Minneapolis: University of Minnesota Press, 1956. Pp. 88-131.
- SKINNER, B. F. *Science and human behavior.* New York: Macmillan, 1953.
- SKINNER, B. F. *Verbal behavior.* New York: Appleton-Century-Crofts, 1957.
- WEICK, K. E. Dissonance and task enhancement: A problem for compensation theory? *Organizational Behavior and Human Performance*, in press.
- ZAJONC, R. B. The concepts of balance, congruity, and dissonance. *Public Opinion Quarterly*, 1960, 24, 280-296.
- ZIMBARDO, P. G., COHEN, A. R., WEISENBERG, M., DWORKIN, L., & FIRESTONE, I. Control of pain motivation by cognitive dissonance. *Science*, 1966, 151, 217-219.

(Received July 8, 1966)