ON OBTAINING THE DISSONANCE EFFECT IN INTERPERSONAL SIMULATIONS

by

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ABSTRACT

An attempt was made to disconfirm the support for self-perception theory derived from interpersonal simulations of cognitive dissonance experiments. Three hundred and thirty-three college student subjects read descriptions of a dissonance experiment, and were then asked to estimate the responses of the original subject to the dependent measures used in that study. However, the experiment descriptions were altered so that they did not reflect the phenomenological reality of the original subjects but may have sponsored the dissonance effect. The five alternative descriptions failed to reproduce this effect, and instead, generated scores which exemplify some problems inherent in the simulation methodology. Replications of three previous interpersonal simulations were attempted in a second design. None of the replications succeeded. The a priori determination of functional elements in actual and simulated dissonance studies was questioned.

INTRODUCTION

Festinger's (1957) original theory of cognitive dissonance posited that an individual holding two conflicting cognitions about his attitude on a topic may experience an aversive emotional state, dissonance, which he can resolve by changing one of the conflicting cognitions. Hence, a subject who is induced to perform a counterattitudinal response without sufficient justification for so doing will change his attitude to make it conform to the attitude his behavior indicated. For example, in an experiment by Festinger and Carlsmith (1959), subjects performed two repetitive motor tasks for one hour and were then informed that they were control subjects in an experiment to test the effects of prior positive expectations on motor performance. Then experimental subjects were further asked to substitute for the experimenter's assistant, who established the positive expectations by telling the subjects that the tasks were fun and interesting. The experimenter manipulated justification by paying subjects either $1 or $20 for their deception of the next subject. All subjects were asked to evaluate the tasks on an 11-point scale, from dull and boring to interesting and enjoyable. The subjects who were paid only $1 for their deception of the next subject were in the high-dissonance condition (lacking apparent justification) and responded that they found the tasks more interesting and enjoyable than subjects in either the low-dissonance condition, or the

control condition in which subjects were not asked to deceive the next subject.

Bem (1965, 1967), adopting a behavioristic approach, not based upon inferences about internal motivational states, posits that a person determines what his attitudes are on the basis of behavior he performs; a person observes himself and his environment to discover what is "inside." If this is true, then other persons, given the same information the subject has, should be able to make the same assessment of the subject's internal condition (or attitude) as the subject himself would make. As Bem explains,

> . . . Our conceptual model of self-perception claims that an individual's attitude statements and an observer's judgments about the individual's attitudes are "output statements" from the same "program." We test this hypothesis by running a simulation of a self-judgment situation, the dissonance experiment, but instead of writing our own program, we plug in an interpersonal-judgment program that the culture has written for us. This program is embodied in our interpersonal observer, who "stands in" for the original subject (1968, p. 272).

In fact, when subjects heard a description of the Festinger-Carlsmith study described above, they responded in the same way Festinger and Carlsmith's subjects responded--the high-dissonance ($1) condition subjects estimated that the hypothetical subject liked the task more than low dissonance ($20) or control subjects (Bem, 1967).

Bem's critics (Jones, Linder, Kiesler, Zanna, and Brehm, 1968; Piliavin, Piliavin, Loewenton, McCauley, and Hammond, 1969) have argued that his simulations replicate the dissonance effects because they omit certain information which was available to the original subjects. Jones et al. (1968) argue that subjects in the simulation can attribute

differing initial attitudes to the hypothetical subject--(in terms of the Festinger-Carlsmith study described above) "If he was willing to tell the next subject that that routine was interesting, for only one dollar, he must have liked it in the first place." However, in his response to Jones et al., Bem cites the findings of an unpublished study showing that even with the knowledge of premanipulation attitude, subjects' estimates confirmed the dissonance predictions, if the subjects also heard a simulated tape recording of the hypothetical subject's deception of the next subject (Bem, 1968).

Piliavin et al. (1969) also criticize Bem's omission of much of the manding material included in protocols for subjects in the original dissonance studies. Bem (1965) adopts Skinner's (1957) definition of mands as statements which appear to be under the control of a specific reinforcing stimulus, as opposed to tacts which are under discriminative stimulus control (e.g., "Please pass the milk," a mand to be reinforced by the passing of milk, vs. "I detest rainy weather," a tact governed by the speaker's reaction to a rainy day). Further, tacts are assumed to be more credible to observers as disclosures of the actor's feelings, since they are a response to the stimulus, rather than a ploy to gain some particular reinforcement. In Bem's descriptions, the $20 payment for the counterattitudinal behavior indicates that the behavior was a mand, to be reinforced by the money. Bem assumes that a $1 payment is insufficient reinforcement for that response, and that his subjects interpret the counterattitudinal behavior as a tact: again, "If he was willing to tell the next subject that that routine was interesting, for

only $1, he must have liked it in the first place." However, Piliavin et al. (1969) point out that other mands may have been operating in the original experiment. These additional mands could have sponsored the counterattitudinal behavior even where the monetary incentive was low. Therefore, in the $1 condition, the counterattitudinal behavior could be interpreted as a mand, and so not indicative of the hypothetical subject's true attitude.

The additional mands available to the Festinger-Carlsmith experimenter were mands for the counterattitudinal behavior: "It will only take a few minutes," "The regular person is pretty reliable," "If we needed you we could phone you a couple of days in advance." In the Festinger-Carlsmith (1959) study, these statements were used only when the subject hesitated, and their function was to persuade the subject to perform the deception. In Bem's simulation of the above experiment, he offered his subjects these additional statements as part of the description of the deception the hypothetical subject agreed to perform (Bem, personal communication, February 27, 1974). In his simulation, then, the statements functioned as tacts. For Bem's observer-subjects, the counterattitudinal behavior appeared to be a tact, and therefore a revelation of the hypothetical subject's true attitude. Hence, the criticism of Piliavin et al. (1969) is applicable to Bem's simulation of the Festinger-Carlsmith study.

Bem has produced a two-fold response to the criticism of Jones et al. (1968) concerning the exclusion of the hypothetical subject's premanipulation attitude from the observer-subjects' protocols (Bem,

1968, and Bem and McConnell, 1970). Bem and McConnell (1970) measured subjects' recall of their initial attitudes after they wrote a counter-attitudinal essay, and found that subjects could not recall their initial attitudes. In fact, subjects "remembered" their initial attitudes as much closer to their final attitudes, and few were aware that their attitudes had changed. Bem and McConnell argue that since premanipulation attitudes are not salient for actual subjects, protocols for simulating subjects should not include that information.

The second argument Bem presents against the Jones et al. criticism is equally applicable to the Piliavin et al. criticism. Bem claims that the similarity of results between actual dissonance experiments and simulated versions of these experiments is the only criterion for evaluation of simulation studies. In fact, failure of a simulation to replicate merely invalidates the simulation, not the theory. For Bem,

> A successful simulation thus implies the same thing that a successful computer simulation implies; namely, that the process model embodied in the "program" is functionally equivalent to the process simulated and, further, that the selection of input statements was not in error. The simulation thus becomes a plausibility demonstration, a sufficiency test: The process model embodied in the program is sufficient--but not necessarily "true" or unique--for generating the output statements observed in the situation being modeled by the simulation (1968, p. 273).

Instead of "improving" experiment descriptions and failing to replicate actual dissonance experiments, then, Bem's theory should be tested with "bad inputs" provided to observer-subjects. If altered inputs do reproduce the dissonance results, then the theory may be disconfirmed (Bem, 1968, and Bem and McConnell, 1970).

Unfortunately, Bem does not define "bad inputs" except that whatever they are, they must 1) reproduce the dissonance effect and 2) not be "good inputs" (which Bem does not define explicitly, either). Presumably the phenomenological reality for the subjects in actual dissonance experiments is the criterion for "good" inputs; at least this is what Bem implies in his counterargument to Jones et al. (Bem, 1968). But what the phenomenological reality is, is indeterminate. Rosenberg (1965) and Tedeschi, Schlenker, and Bonoma (1971) argue that one aspect of that reality may be concern for the experimenter's opinion of the subject--evaluation apprehension. Removing any tinge of evaluation apprehension given by the experimenter, or describing a large number of evaluation apprehension-arousing cues, might constitute "bad" inputs, which could still produce the dissonance effect. Brief, sketchy, or confusing inputs, although they may better represent phenomenological reality (making Bem's inputs "bad"?) might produce dissonance results.

The present two experiments explored the ability of various sets of inputs to produce the dissonance effects in simulating subjects. The experiments do not bear on the validity of Bem's theory. Whether subjects experience dissonance and are thereby motivated to change their attitudes, or whether subjects observe themselves and thereby determine their attitudes, is a metaphysical question, or, as Bem calls it, "a matter of taste" (Bem and McConnell, 1970, p. 30). Similarly, these studies do not address the validity of cognitive dissonance theory. Rather, the issue is the validity of interpersonal simulations of dissonance studies. The effort here is directed at obtaining dissonance

results with inputs which do not reflect phenomenological reality, thereby casting doubt on the support for Bem's theory which he derives from simulations.

EXPERIMENT I

Subjects were asked to read a description of the Festinger-Carlsmith (1959) experiment outlined above, and to give their estimates of the original subject's responses on the attitude measuring scales used in that study. Three factors were tested in the design. First, three descriptions were used. The BEM description omitted information concerning the premanipulation attitude and additional mands available to the experimenter, while the JONES description included the premanipulation attitude and the PILIAVIN description included the additional mands. The three levels of the reward factor were the two conditions of reward to the original subject ($1 and $20) and the control condition in which subjects' estimates were based only on the description of the motor tasks and of the alleged purpose of the experiment. Finally, half of the subjects in each of the two experimental reward conditions heard a tape recording of the original subject's discussion of the motor tasks with the next subject. Since Bem (1967) used such a tape, the BEM-TAPE cells constitute the actual Bem replication attempt. When simulating subjects heard a recording of this discussion, even with knowledge of the premanipulation attitude, the dissonance effect was obtained (unpublished paper cited by Bem, 1968). If this finding is replicated, then perhaps even "bad inputs"--those not adhering to the phenomenological reality of the original subjects--can produce the dissonance effect in simulations.

Method

Subjects and Experimenters

One hundred and eighty-three students enrolled in Introductory Psychology classes at The University of Arizona served as subjects. Subjects were recruited from 21 small classes. Treatment conditions were randomly paired with class groups. One blank and one incomplete protocol were discarded, and a third protocol from a student who had read other material during the presentation of the stimuli was eliminated. Data were collected from three additional subjects to provide ten subjects per cell. Two experimenters, working separately, conducted the study. Both were females introduced to the subjects as second-year graduate students fulfilling their Master's degree requirements.

Procedure

Subjects agreed to participate in an experiment on interpersonal judgments to be conducted in the classroom at the close of the class meeting. An attempt was made to secure ten volunteers (a complete cell) from each class; in five cases this was impossible, and five additional classes supplied the remainder.

Subjects received a pamphlet containing the appropriate experiment descriptions, counterattitudinal behavior description (not included for reward-control subjects), and the dependent measures. The experimenter described the pamphlets as transcripts of a tape recording, and after urging attention to the brief tapes, played the recordings while the subjects read the transcripts.

On the first tape a male reader described the experiment, in which the motor tasks, transferring spools back and forth from a tray and rotating pegs in a pegboard, were performed by the subject for a total of one hour. A second tape containing the counterattitudinal behavior description was played for subjects in the $1 and $20 reward conditions. The second tape was placed in the recording machine while the subjects turned to the second page of the pamphlets. In the TAPE conditions in which the counterattitudinal behavior was presented, a third recording was played while subjects listened. This tape was described to the subjects as "Bob talking to the person he thinks is the next subject," and it contained a simulation of the deception performed by the hypothetical subject. When the appropriate tapes had been played, subjects were asked to turn to the final page of the pamphlet and answer the questions to be found there. The experimenter answered any questions about the subjects' task by reiteration of the appropriate instructions. Figure 1 illustrates the order of presentation of stimuli for subjects in the eighteen treatment conditions of Experiment I.

When the questionnaires had been filled out, the experimenter collected them, thanked the subjects, and asked them not to discuss the experiment with anyone for a few weeks. She explained that the contents of the tapes differed from group to group, and that the results would be contaminated if subjects in one group heard the information that was presented to another group. A brief explanation of the purpose of the study was offered.

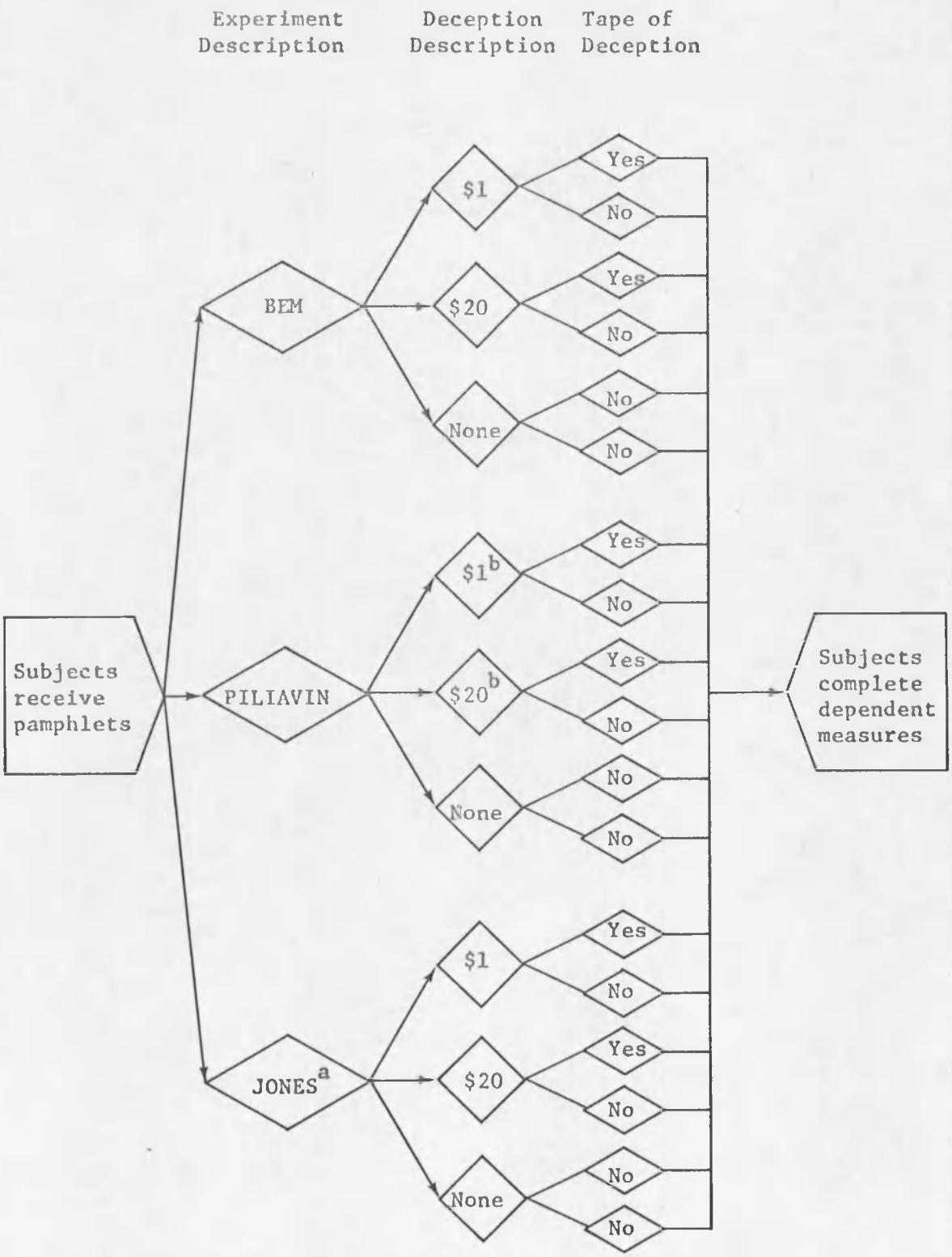

Fig. 1. Flow Diagram, Procedures and Stimulus Materials, Experiment I

[a]JONES manipulation inserted. [b]PILIAVIN manipulation inserted.

Stimulus Materials

The experiment descriptions for the BEM and PILIAVIN conditions introduced Bob Downing, a college sophomore, who had volunteered for an experiment involving two motor tasks. The tasks were described in detail, nonevaluatively, and identically across description conditions. Subjects were further told that the experimenter watched, timed, and recorded Bob's actions during these tasks. Then the alleged purpose of the experiment was described, as in the original study (Festinger and Carlsmith, 1959): Bob was informed that a confederate told some of the subjects that the experiment was interesting and enjoyable; the experimenter wanted to see the effect of this previous information on the subjects' performance. The JONES experiment description was identical to the BEM and PILIAVIN protocols, except that it included the premanipulation attitude, by the insertion of the statement "Bob found the tasks very boring" after the description of the motor tasks.

After the presentation of the experiment description, reward control subjects completed the dependent measures. Since the PILIAVIN manipulation (additional mands) and the tape factor were only operative in the conditions where the counterattitudinal behavior was presented (the $1 and $20 reward conditions), there was little difference between control groups. Control subjects in the JONES condition had heard Bob's premanipulation attitude, but the four control groups in the BEM and PILIAVIN conditions received identical treatments. However, to facilitate analysis, the six control groups were treated separately in the

random assignment of subjects to treatment conditions and in the subsequent statistical tests.

The counterattitudinal manipulation for subjects in the $1 and $20 reward conditions was described as follows:

> That day, the student was absent who was supposed to assist the experimenter by telling subjects in Group 2 about the tasks. So the experimenter asked Bob to stand in for him by telling the next subject, who had already arrived at the lab, that the tasks were interesting and enjoyable. Bob would be paid $1 ($20) for doing this, that is, for going into the waiting room and telling the next subject that the tasks were interesting and enjoyable, and also for being ready to substitute for the other assistant in the future. Bob agreed to do this for the $1 ($20). Then Bob went into the waiting room and argued imaginatively and persuasively that the tasks were, in fact, fun and enjoyable.

The above description was given to subjects in the BEM and JONES description conditions. In the PILIAVIN conditions, before the sentence "Bob agreed to do this for the $1 ($20)," the additional mands available in Festinger and Carlsmith's (1959) experiment were inserted: "Bob hesitated, so the experimenter added that it wouldn't take much of Bob's time to do this, that he probably would not have to substitute often, and that he could have a couple of days warning whenever they would need him again. Besides, the next subject was waiting." Then the protocol continued as in the BEM and JONES conditions.

For subjects in the NO TAPE conditions, the dependent measures were completed at the conclusion of the counterattitudinal manipulation description. In the TAPE condition, subjects listened to a final recording of "Bob" talking to the "next subject." In this conversation, Bob tried to assure the next subject that, while the tasks "sounded awful at first," they were actually enjoyable, since "you can find out

things about yourself while you're doing them." For Bob, the things he learned were "how your minds works, how you react to someone watching you, how good your endurance is." The next subject then informed Bob that she had heard the experiment was " a real drag" and should be avoided if possible. Bob averred that such a reaction was only one possibility and that "if you try, you can get something out of it." He argued once more that the experiment was worthwhile as a tool for introspection ("You can find out how your mind works, and it's easier, because you've got something to concentrate on"). His comments closed with "I think you'll like it." Then the dependent measures were completed by subjects in these conditions.

Dependent Measures

The dependent measures consisted of four 11-point scales which subjects were instructed to fill out as they thought Bob would have answered them. The scales are reproduced below.

> Recall the two experimental tasks: transferring the spools back and forth from the tray and rotating the pegs in the pegboard, each of which tasks Bob spent one-half hour on. Rate these tasks together according to how you think Bob felt about them.
>
> On the following scale, Bob would have rated the two tasks as
>
> dull and boring — -5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5 — interesting and enjoyable
>
> Recall the experiment in general, about the difference made on behavior if people have expectations about the things they'll be doing. Bob would have rated how much he learned from this experiment as
>
> very little — 0 1 2 3 4 5 6 7 8 9 10 — very much

Bob would have rated the scientific value of this experiment as

of little scientific value	0 1 2 3 4 5 6 7 8 9 10	of great scientific value

If asked to be in another, similar experiment, Bob probably would have rated his desire to participate in the next experiment as

very small	-5 -4 -3 -2 -1 0 +1 +2 +3 +4 +5	very great

The brief reviews of the motor tasks and of the experiment in general were included in the questions because pilot studies had shown that some subjects were confused about which "tasks" and which "experiment" were referents for those terms.

Results and Discussion

Means and standard deviations for all cells are presented in Table 1. An analysis of variance was performed for each of the four dependent measures in the $S_{180}(T_2R_3D_3)$ design. Results of these analyses are presented in Table 2. In addition, Table 2 shows the values of ω^2 for significant sources (Hays, 1963). Where warranted by the first analysis, means were compared using Tukey's H. S. D. method (Runyon and Haber, 1972).

First Dependent Measure

Only the description source produced a significant effect on subjects' estimates of how interesting Bob found the two motor tasks ($F = 18.338$, df 2/162, $p < .001$). All three description condition means differed significantly from each other ($ps < .01$). The JONES manipulation, telling subjects that Bob found the tasks very boring, elicited

Table 1. Means and Standard Deviations for All Conditions: Experiment I

Dependent Measures and Reward Conditions	Description Conditions: BEM TAPE	BEM NO TAPE	JONES TAPE	JONES NO TAPE	PILIAVIN TAPE	PILIAVIN NO TAPE
Task interest[a]						
$1						
mean	0.00	-1.45	-3.20	-3.85	-2.55	-2.90
s.d.	2.357	2.006	2.860	1.454	2.713	1.174
$20						
mean	-0.90	-1.70	-3.20	-3.15	-1.90	-2.90
s.d.	2.436	3.433	21.50	2.261	1.792	2.234
None						
mean	-2.40	-1.15	-4.45	-4.70	-3.40	-1.55
s.d.	2.757	2.161	0.956	0.482	2.119	3.041
Experiment as a learning experience[b]						
$1						
mean	6.00	3.95	5.25	3.30	2.45	3.30
s.d.	2.108	2.455	3.002	3.233	2.166	3.066
$20						
mean	4.25	4.70	1.95	2.80	4.45	4.00
s.d.	2.899	3.198	1.950	3.084	2.362	2.906
None						
mean	2.40	1.90	1.75	3.60	2.20	2.45
s.d.	1.955	1.449	2.751	4.575	2.658	2.817
Scientific value of experiment[b]						
$1						
mean	6.15	5.15	3.20	4.60	3.30	2.20
s.d.	1.634	2.688	3.450	2.547	1.989	1.636
$20						
mean	5.40	5.40	2.85	4.40	3.85	3.80
s.d.	3.169	2.271	2.583	2.951	2.109	2.741
None						
mean	3.40	3.40	3.25	3.25	1.90	3.15
s.d.	2.503	1.761	2.956	3.953	2.283	2.261

Table 1, continued

Dependent Measures and Reward Conditions	Description Conditions: BEM TAPE	BEM NO TAPE	JONES TAPE	JONES NO TAPE	PILIAVIN TAPE	PILIAVIN NO TAPE
Bob's willingness to participate in another, similar experiment[a]						
$1						
mean	2.15	0.70	-1.85	-1.20	-1.45	-2.65
s.d.	2.358	3.268	3.916	2.821	3.287	2.829
$20						
mean	0.90	0.80	-1.65	-1.50	-0.45	-1.70
s.d.	3.348	3.190	2.495	3.029	3.730	3.233
None						
mean	-1.45	-1.30	-3.35	-3.80	-2.20	-2.05
s.d.	3.095	2.406	2.237	2.044	2.616	2.671

[a]Scale range was -5 to +5.
[b]Scale range was 0 to 10.

Table 2. Analyses of Variance Summary Table: Experiment I

Dependent Measure	Source	df	MS	F	ω^2
Task interest	TAPE (T)	1	1.013	<1	
	REWARD (R)	2	8.039	1.583	
	DESCRIPTION (D)	2	93.135	18.338[e]	0.1609
	T x R	2	13.817	2.720[a]	
	T x D	2	1.138	<1	
	R x D	4	4.343	<1	
	T x R x D	4	3.942	<1	
	Error	162	5.079		
Experiment as a learning experience	T	1	0.272	<1	
	R	2	45.843	6.057[d]	0.0512
	D	2	11.018	1.455	
	T x R	2	10.868	1.436	
	T x D	2	4.358	<1	
	R x D	4	19.797	2.616[b]	0.0327
	T x R x D	4	9.306	1.229	
	Error	162	7.569		
Scientific value of experiment	T	1	2.335	<1	
	R	2	26.193	3.880[c]	0.0293
	D	2	49.926	7.396[e]	0.0652
	T x R	2	2.418	<1	
	T x D	2	6.926	1.026	
	R x D	4	8.003	1.185	
	T x R x D	4	4.916	<1	
	Error	162	6.750		
Bob's willingness to participate in another experiment	T	1	6.235	<1	
	R	2	58.004	6.607[d]	0.0537
	D	2	108.037	12.307[e]	0.1083
	T x R	2	1.435	<1	
	T x D	2	3.026	<1	
	R x D	4	9.973	1.136	
	T x R x D	4	3.470	<1	
	Error	162	8.779		

[a] $p < .10$
[b] $p < .05$
[c] $p < .025$
[d] $p < .005$
[e] $p < .001$

the lowest estimates. The presence of the additional mands in the PILIAVIN condition also reduced scores compared to the BEM condition (see Table 3). This evidence indicates that most subjects were generally attentive to the stimulus materials, since they responded differentially to the three description conditions. But sufficient ambiguity remained so that other, unmeasured factors had the most influence on subjects' responses, for only 16% of the variance was accounted for by this single significant source ($\omega^2 = .16$).

The failure of the Tape X Reward X Description interaction to attain significance ($F < 1$) denotes the failure of this experiment to replicate the Bem (1967) study, although in the BEM conditions, the means are in the dissonance-predicted direction (see Table 1). Since the dissonance effect was not obtained in the BEM conditions, where it was expected, the absence of the effect in the PILIAVIN and JONES conditions cannot confidently be attributed to the additional items of information given to subjects in those conditions. While the additional mands or the premanipulation attitude may have negated the dissonance effect for subjects who received that information, the undetermined factors which precluded the effect in the BEM conditions may have also been responsible for its absence in the other two conditions; hence, the Piliavin et al. (1969) and Jones et al. (1968) effects were not conclusively replicated either. Lack of attention to the stimuli and misunderstanding of the rating scales cannot have been major causes of the failures of replication. The weakness of the effect and the persistent ambiguity in the experiment and counterattitudinal behavior descriptions

Table 3. Description Condition Means for Task Interest Measure: Experiment I

	Description Condition		
	BEM	JONES	PILIAVIN
mean	-1.27	-3.76	-2.53
s.d.	2.567	1.906	2.255

are more probable causes of the failures. Some carelessness in responding may be indicated by the small number of subjects who had difficulty answering the questions. It seems likely that if all subjects had been responding conscientiously, more of them would have had questions about their tasks.

The problem of excessive variance is well illustrated by the marginally significant Tape X Reward interaction (F = 2.720, df 2/162, $p < .10$). As Table 4 and Figure 2 show, the tape enhanced scores in the $1 and $20 conditions, across description levels. However, the largest difference between TAPE-NO TAPE means is for the control groups--groups for which the tape factor was not a procedural variable, since those subjects were not presented with the counterattitudinal manipulation. By sampling or slight variations in the experimenters' protocol, mean differences as large as those between treatment groups were obtained.

Second Dependent Measure

Subjects' estimates of how much Bob thought he learned from the experiment were influenced by reward (F = 6.057, df 2/162, $p < .005$, ω^2 = .05), with the $1 and $20 means significantly surpassing the control group mean ($p < .01$ and $p < .05$, respectively). However, no difference obtained between the $1 and $20 means (see Table 5). Since the two incentive levels did not sponsor differences in the responses on this measure, it is unlikely that an incentive effect accounts for the overall effect of the amount of payment. Rather, since the counterattitudinal behavior description was confounded with the $1 and $20 reward conditions, the information that Bob agreed to perform the deception

Table 4. Tape X Reward Interaction[a] Means for Task Interest Measure: Experiment I

Reward Condition		Tape Condition TAPE	NO TAPE
$1			
	mean	-1.92	-2.73
	s.d.	2.919	1.828
$20			
	mean	-2.00	-2.58
	s.d.	2.278	2.685
None			
	mean	-3.42	-2.47
	s.d.	2.182	2.645

[a] This source was only marginally significant.

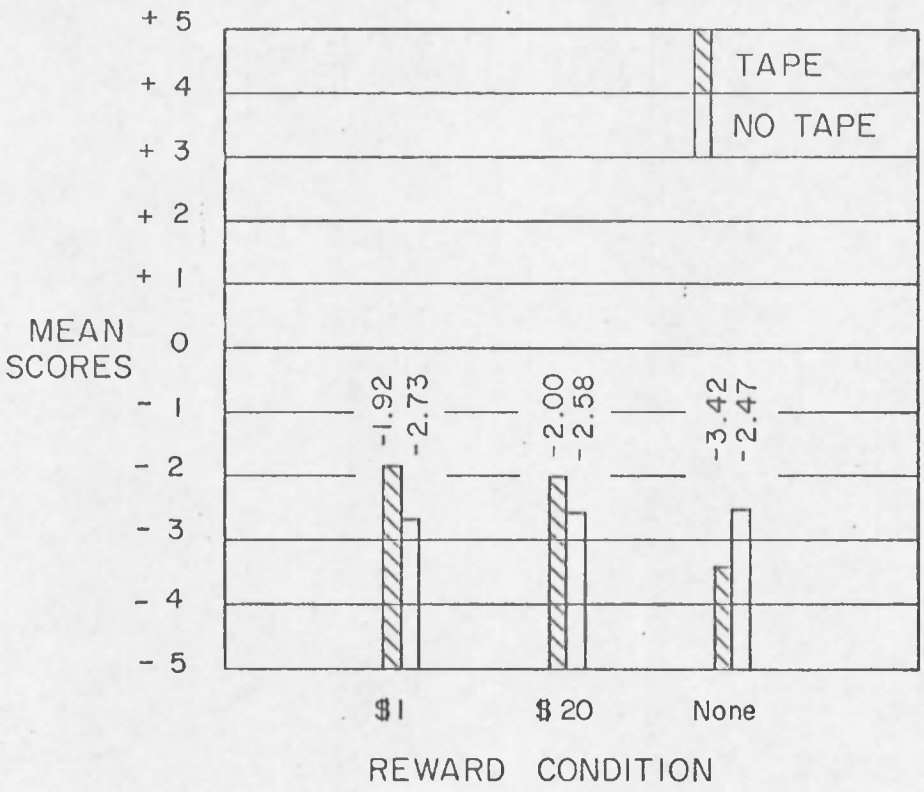

Fig. 2. The Tape X Reward Interaction for Measure of Task Interest: Experiment I

This source was only marginally significant.

Table 5. Reward Condition Means across and within Description Conditions for Measure of Experiment as Learning Experience: Experiment I

Description Condition	Reward Condition $1	$20	None
Overall			
mean	4.04	3.69	2.38
s.d.	2.869	2.829	2.723
BEM			
mean	4.97	4.47	2.15
s.d.	2.463	2.980	1.694
JONES			
mean	4.27	2.37	2.67
s.d.	3.197	2.547	3.785
PILIAVIN			
mean	2.87	4.22	2.32
s.d.	2.620	2.583	2.386

may have elevated the means for both reward groups, regardless of the incentive level.

A significant Reward X Description interaction obtained (F = 2.616, df 4/162, $p < .05$, $\omega^2 = .03$). Table 5 and Figure 3 illustrate the pattern of the results across and within description conditions. Only the extreme means (BEM-$1 and BEM-control) were significantly different ($p < .05$). The elevation of scores in both the $1 and $20 reward conditions is found in the BEM cells. In the JONES description groups, only the $1 incentive produced higher scores, while only the $20 incentive did so in the PILIAVIN condition. Only in the BEM description cells is a significant difference between reward condition means obtained. Here, the counterattitudinal behavior description, without any indication of Bob's negative feelings, had the greatest opportunity to affect scores. That significance obtained between the $1 and reward-control groups may be a result of appropriate discrimination of mand and tact, so that Bob's deception for only $1 was used to infer that his attitude toward the tasks was more positive. However, the $20 reward cell mean is only slightly different from the $1 group mean. Apparently Bob's deception for $20 was also seen as a tact.

The tape factor was not significant either as a main effect or in interaction with other factors. This was surprising, since "Bob" had argued that the experiment was valuable as a tool for introspection, and had in fact enumerated the things he learned from it. The subjects' responses may indicate that they interpreted these statements as mands, and hence did not find them indicative of Bob's true feelings. However,

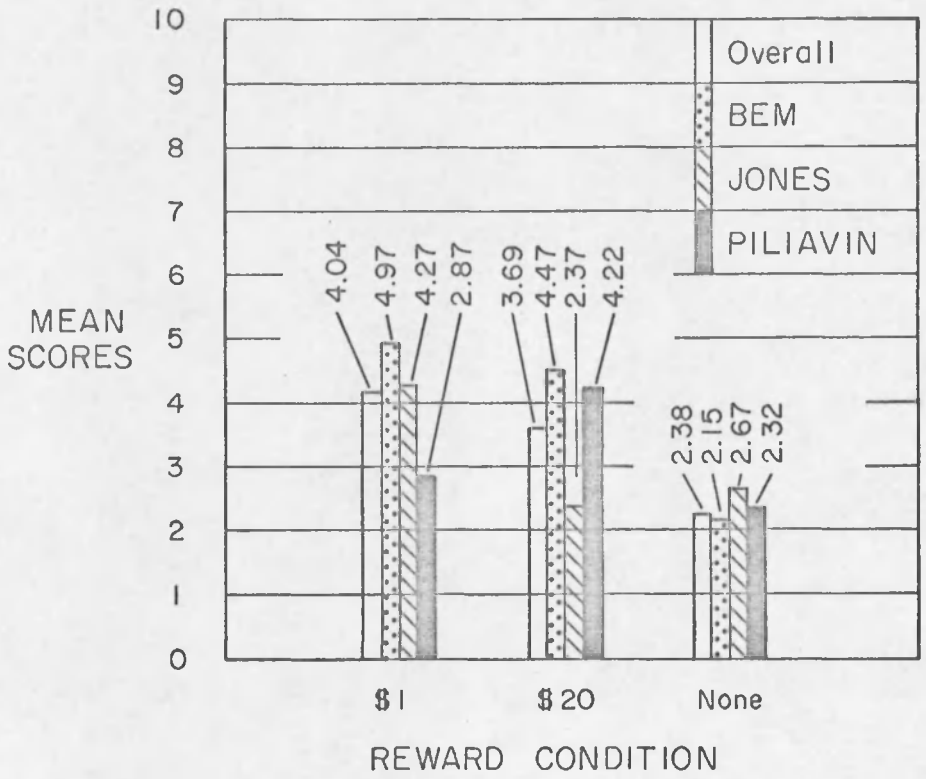

Fig. 3. The Reward X Description Interaction for Measure of Experiment as a Learning Experience: Experiment I

in the BEM-TAPE cells (the actual replication cells) the means are again in the dissonance predicted direction (see Table 1).

A more parsimonious interpretation of the failure of the tape factor to affect the scores would be subjects' failure to properly attend to the third tape, especially since they had no transcript for it.

Third Dependent Measure

The reward ($F = 3.880$, df 2/162, $p < .025$, $\omega^2 = .03$) and description ($F = 7.396$, df 2/162, $p < .001$, $\omega^2 = .06$) factors produced significant effects on the measure of Bob's estimate of the scientific value of the experiment. As Table 6 shows, the $1 and $20 reward conditions produced higher estimates than the reward-control condition. Again, since the tape factor showed no significant main effects or interactions, and the amounts of incentive did not affect scores differentially, the descriptions of the counterattitudinal behavior itself may have elevated the scores. The information that Bob agreed to perform the deception was perhaps interpreted by the subjects as an indication of greater regard for the experiment. Alternatively, the subjects may have decided that an experimenter who had funds to pay his assistants must have been engaged in important research.

As Table 7 indicates, the BEM description sponsored higher scores than either the JONES ($p < .05$) or PILIAVIN ($p < .01$) conditions. Stating or implying that Bob's feelings toward the task were negative reduced scores, demonstrating that subjects attended to the stimuli.

Table 6. Reward Condition Means for Measure of Scientific Value of Experiment: Experiment I

	Reward Condition		
	$1	$20	None
mean	4.10	4.28	3.06
s.d.	2.669	2.708	2.646

Table 7. Description Condition Means for Measure of Scientific Value of Experiment: Experiment I

	Description Condition		
	BEM	JONES	PILIAVIN
mean	4.82	3.59	3.03
s.d.	2.524	3.051	2.230

Fourth Dependent Measure

The reward (F = 6.607, df 2/162, $p < .005$, ω^2 = .05) and description (F = 12.307, df 2/162, $p < .001$, ω^2 = .11) sources had significant effects on the measure of Bob's willingness to participate in another, similar experiment. Combined, the two factors accounted for approximately 16% of the variance. Here again, the description of the counterattitudinal behavior, confounded across the $1 and $20 reward levels, influenced the scores regardless of incentive amount. Both the $1 and $20 reward conditions produced significantly ($ps < .01$) greater estimates of Bob's willingness to serve in another study than the control conditions in which the counterattitudinal behavior was not presented (see Table 8). Since this measure was the last one for all subjects, it is possible that a set sponsoring higher estimates was established in response to the second and third measures, and simply persisted into the fourth. As a check on this possibility, correlation coefficients for successive pairs of scores were calculated. The correlation between the second and third measures was .63, and between the third and fourth measures, .61. A set effect may have influenced the scores, then; however, the correlation could also be due to the dependency of all three estimates on the subjects' notions of Bob's general attitude toward the experiment.

Again, the BEM condition produced significantly ($ps < .01$) higher estimates than either the JONES or PILIAVIN descriptions (see Table 9). As with the second and third dependent measures, any indication of Bob's negative feelings toward the experiment resulted in lower scores, and

Table 8. Reward Condition Means for Measure of Bob's Willingness to Participate in Another Experiment: Experiment I

	Reward Conditions		
	$1	$20	None
mean	-0.72	-0.60	-2.36
s.d.	3.408	3.252	2.597

Table 9. Description Condition Means for Measure of Bob's Willingness to Participate in Another Experiment: Experiment I

	Description Conditions		
	BEM	JONES	PILIAVIN
mean	0.30	-2.23	-1.75
s.d.	3.122	2.878	3.034

again, the differential response can be considered evidence that subjects were attending to the stimulus materials.

Summary of Results of Experiment I

The description source significantly influenced all dependent measures, as a main effect in three cases and in interaction with the reward factor in one instance. The JONES and to a lesser extent the PILIAVIN descriptions, with their inclusion of evidence that Bob's feelings about the experiment were negative, produced lower estimates than the BEM description in which Bob's feelings were not described.

The reward source was a significant factor on three dependent measures, as a main effect and in one case also in interaction with the description conditions. Since the difference between the $1 and $20 reward levels did not show a main effect, the difference between these two levels and the reward-control level was attributed to the counter-attitudinal behavior description itself. Apparently, the subjects interpreted Bob's performance of the deception to mean that his attitude toward the task was more positive than the experiment description alone indicated, regardless of the amount paid to him.

The tape factor was only marginally significant in interaction with the reward source on the first dependent measure.

Conclusions

This experiment failed to replicate the effects of the three studies it was designed to reproduce. The subjects' lack of attention to the stimulus materials cannot reasonably be invoked to explain the

failure, since subjects did respond differentially to the three description conditions. On some measures there was also differential responding to the two reward levels of $1 and $20, indicating attention to the counterattitudinal behavior description as well.

Rather, the subjects simply did not draw the same conclusions from the descriptions as were reached by subjects in the previous studies. Bob's initial attitude, the conception of "sufficient justification," and his performance of the counterattitudinal behavior were related to each other differently by the present subjects than by previous ones.

On most dependent measures, estimates were increased in both the $1 and $20 reward conditions. From a dissonance standpoint, then, for the present subjects, even $20 was insufficient justification for the deception, and attitude estimates were, accordingly, elevated; on the other hand, in terms of self-perception theory, even a low-cost response, when performed for $20, was here interpreted as a tact, so that Bob's deception was seen as evidence of his actual attitude.

In terms of both dissonance and self-perception theories of attitude change or attitude expression, the question arises of how a priori determinations of the functional elements in an attitude experiment are made. Festinger and Carlsmith, and Bem's subjects, apparently found $20 to be sufficient compensation for the deception--although in these studies excessive variance is a problem (using powerful statistical tests and large ns, their effects achieve significance levels of .02 to .05). The present subject sample did not reliably perceive the

$20 as justification for the counterattitudinal behavior (although the means in the BEM-TAPE cells were in the dissonance-predicted direction). Bem (1967) questioned how the experimenter determines what "dissonance" relationship will be established by his manipulations, claiming that the experimenter infers the presence of dissonance using his knowledge of the reinforcement history of the subject, specifically the reinforcement for consonant behaviors provided by the culture. Dissonance investigators implicitly assume that this reinforcement history varies minimally across individuals, including themselves. That people differ with regard to their conception of incongruent cognitions is indicated by the weakness of the dissonance effect obtained experimentally.

The same questions of a priori determination of functional elements can be raised for Bem's determination of mand and tact. In the irrefutable inductive posture of the radical behaviorist, Bem would determine mand and tact discrimination on the basis of prior reinforcement history for correctly making that discrimination. However, in his simulations of dissonance experiments, instead of identifying the reinforcement history of his subjects, Bem also assumes a culturally-determined, and therefore common, reinforcement history for the correct discrimination of mand and tact. Bem can, therefore, predict that observer-subjects will accurately estimate the actual subject's response, reproducing the dissonance effect to the extent that he, too, obtains the relatively low statistical reliability of the original dissonance studies, for a similar reason--reinforcement histories for accurate

discrimination of mand and tact vary widely across individuals within cultures.

Therefore, a qualification of both theories is proposed. In cognitive dissonance theory, dissonance will be detected when the experimenter's learning of consonant behavior and discrimination of dissonant elements is similar to the subjects' reinforcement history. For self-perception theory, replication of dissonance results will obtain when the mand/tact discrimination has been learned to the same extent and to the same discriminanda by both original and observer subjects.

Bem suggests that investigations of attitude processes involve both actual subjects and observer-subjects in conjunction, either simultaneously or with stimulus materials and responses obtained from the former given to the latter. Even here, where problems of protocol content are less serious, variance is a problem (unpublished paper cited by Bem, 1972). Without preselection for homogeneity of learning between the appropriate combination of experimenters, subjects, and observers, motivational or attributional effects of counterattitudinal behavior performance will continue to appear weak.

EXPERIMENT II

The second experiment in this study was an attempt to produce the dissonance effect with "bad inputs." Five experiment descriptions were crossed with the two conditions of reward to the hypothetical subject ($1 and $20), and the control condition in which subjects estimates were given after the description of the experimental tasks alone. The five descriptions were each intended to produce the dissonance results, and yet not reflect the phenomenological reality of the original subjects.

The BRIEF description consisted of a short paragraph, in which the motor tasks were not described, but were merely characterized as dull and boring. This description omitted several elements which have a high probability of being in the original subjects' awareness, e.g., the nature of the tasks and the experimenter's observing behavior. The JONES I condition introduced to the observer-subjects information that Bob forgot his initial attitude, and the JONES II condition added that Bob forgot his initial attitude and this his feelings changed. Bem and McConnell (1970) found that subjects in a counterattitudinal essay-writing study did in fact forget their initial attitudes, and were also unaware that their attitudes had changed. Hence, neither the JONES I nor JONES II descriptions are necessarily phenomenologically accurate. The two remaining descriptions varied in the extent to which they contained evaluation apprehension-arousing cues. In the descriptions

containing few evaluation apprehension-arousing cues (hereafter "E.A. LOW"), the suggestions of Rosenberg (1969) were applied to the experiment descriptions: the experimenter's observation of the hypothetical subject during the motor tasks was not described, and the hypothetical subject was asked to perform the counterattitudinal behavior by a second experimenter. In the protocol containing many statements designed to arouse evaluation apprehension (hereafter "E.A.HIGH"), extra sources of evaluation apprehension were described, also based on Rosenberg's (1969) suggestions. Many of the evaluation apprehension-arousing cues used in this condition enhanced the appearance of the experimenter as a resource-controller. However, these cues also enhance the possibility that Bob's behavior will be interpreted as manding, so that the E.A. HIGH description resembles the PILIAVIN description used in the first experiment. Of the five descriptions, then, this one carries the least probability of sponsoring a dissonance effect.

Method

Subjects and Experimenter

One hundred and fifty students enrolled in Introductory Psychology classes at The University of Arizona served as subjects in this experiment. Subjects were recruited from 20 small classes. Treatment conditions were randomly assigned to class groups. The experimenter was a female introduced to the subjects as a second-year graduate student fulfilling her Master's degree requirements.

Procedure

As in Experiment I, subjects were recruited to participate in an experiment on interpersonal judgments. The experiment took place at the end of the class meeting. Again, an attempt was made to secure ten volunteers from each class, and, in five instances, a second class supplied the remainder needed to complete a cell.

The procedure was identical to that used in the first experiment except that here only two tapes were used, one describing the experiment and another the counterattitudinal behavior. Also, in the present experiment, all control groups differed procedurally from each other.

Stimulus Materials and Dependent Measures

In the BRIEF experiment description, subjects read

> Bob Downing, a college sophomore, was in an hour-long psychology experiment in which he performed two motor tasks. Most people found these tasks very dull and monotonous. Then the experimenter told him that the purpose of the experiment was to see how the subject performed on the tasks depending on whether he had heard it was fun and interesting or not. Bob had been in Group One, which had heard nothing about the experiment, until they started the tasks.

The counterattitudinal behavior description in the BRIEF condition was also an abbreviated version of the BEM description used in Experiment I.

> Bob was then asked to fill in for the student who regularly told the subjects in Group Two that the tasks were fun and interesting. The experimenter offered to pay him $1 ($20) to do this and to be on standby to fill in again if the regular student didn't show up. Bob agreed to do it for the $1 ($20), and he argued imaginatively and persuasively that the tasks were fun and interesting.

Since the dependent measures used in Experiment I had referred to the nature of the tasks (transferring spools, etc.), one alteration was made

on the questionnaire for subjects in the BRIEF condition. In the paragraph preceding the first scale, subjects read "Recall the two experimental tasks, motor tasks which most people found very boring. Rate these tasks together according to how you think Bob felt about them." The remaining three rating scales were identical to those used in Experiment I. In the other description conditions of this experiment, the dependent measures from the first experiment were used.

The JONES I and JONES II descriptions varied from the JONES description used in Experiment I by the addition of the following sentence after the information about the motor tasks: (JONES I) "Bob had found the tasks very boring, but in the events that followed, he forgot his original feelings"; (JONES II) "Bob had found the tasks very boring, but in the events that followed, he forgot his original feelings, and his feelings changed."

The E.A.LOW description was based on the BEM protocol from Experiment I. Here, however, the experimenter's observing behavior was not included in the experiment description. Also, the subjects were informed that a second experimenter explained the alleged purpose of the study (and solicited Bob's counterattitudinal behavior in the $1 and $20 reward conditions). In its description of the motor tasks and of the deception Bob performed, this protocol did not differ from the BEM description used in Experiment I.

In the E.A.HIGH condition, evaluation apprehension-arousing cues were added to the BEM description. Before the information about the motor tasks, this protocol contained the following statements:

> The experimenter was a professor of psychology and the experiment took place in his laboratory. The subject was a college sophomore, Bob Downing, who had volunteered to be in the experiment, in part because he wanted to get to know the professor so he could later get a letter of recommendation from him. The experiment involved not only physical skills but also revealed the extent of the subject's personality adjustment.

In addition, subjects were informed that the experimenter, while watching Bob's actions, did not speak to him (emphasizing the authority of the experimenter). Finally, the subjects heard that Bob asked how well he had done, but the professor said he wouldn't know until he had analyzed the data. The counterattitudinal behavior description used in the E.A.HIGH conditions was identical to the protocol used in the BEM conditions, except that it included the statement "The experimenter added that if Bob did well, he might be able to assist in other research projects as well." The statement was inserted immediately preceding the sentence "Bob agreed to do this for the $1 ($20)."

Results and Discussion

Table 10 contains the means and standard deviations for all cells on all measures in Experiment II. Results of the analysis of variance for each dependent measure in the $S_{150}(R_3D_5)$ design are presented in Table 11, which also contains the estimated values of $\underline{\omega}^2$ for the four significant sources in this study (Hays, 1963). Results of subsequent tests using the Tukey H. S. D. method (Runyon and Haber, 1972) are presented below.

The most important result of this experiment is the failure of any of the protocols to provide the dissonance results. Instead, four

Table 10. Means and Standard Deviations for All Conditions: Experiment II

Dependent Measures and Reward Conditions	Description Conditions				
	BRIEF	JONES I	JONES II	E.A.HIGH	E.A.LOW
Task interest[a]					
$1					
mean	-0.75	-4.00	-3.85	-2.60	-2.00
s.d.	3.012	1.054	1.001	1.430	3.559
$20					
mean	0.10	-4.35	-4.10	-2.55	-3.50
s.d.	3.107	0.883	1.524	3.023	2.759
None					
mean	-1.50	-3.35	-3.05	-3.50	-2.40
s.d.	2.224	1.375	2.140	1.354	3.134
Experiment as a learning experience[b]					
$1					
mean	5.45	3.70	4.95	3.60	3.70
s.d.	2.477	2.627	3.023	2.011	3.093
$20					
mean	4.70	5.05	2.70	3.55	3.00
s.d.	2.584	3.113	3.368	3.131	1.700
None					
mean	5.80	4.10	3.90	1.70	2.90
s.d.	2.098	2.558	3.256	1.418	3.035
Scientific value of experiment[b]					
$1					
mean	5.35	4.20	3.60	5.40	3.40
s.d.	2.561	1.751	2.283	1.647	2.675
$20					
mean	5.10	4.45	3.60	4.55	3.50
s.d.	2.331	3.370	2.271	2.297	1.434
None					
mean	5.30	4.65	4.80	3.10	2.80
s.d.	1.889	1.765	3.164	1.792	2.700

Table 10, continued

Dependent Measures and Reward Conditions	Description Conditions				
	BRIEF	JONES I	JONES II	E.A.HIGH	E.A.LOW
Bob's willingness to participate in another experiment[a]					
$1					
mean	-0.15	-2.10	-1.45	0.00	-0.10
s.d.	3.317	2.726	3.095	3.399	3.755
$20					
mean	1.75	1.45	1.20	1.90	-0.70
s.d.	3.277	3.609	4.050	2.558	3.401
None					
mean	0.00	-0.95	0.20	-1.90	-1.40
s.d.	3.432	3.095	3.945	2.885	3.273

[a]Scale range was -5 to +5.
[b]Scale range was 0 to 10.

Table 11. Analyses of Variance Summary Table: Experiment II

Dependent Measure	Source	df	MS	F	ω^2
Task interest	REWARD (R)	2	0.720	<1	
	DESCRIPTION (D)	4	47.461	9.072[c]	0.1791
	R x D	8	5.041	<1	
	Error	135	5.231		
Experiment as a learning experience	R	2	4.507	<1	
	D	4	26.918	3.706[b]	0.0685
	R x D	8	5.398	<1	
	Error	135	7.264		
Scientific value of experiment	R	2	0.852	<1	
	D	4	16.047	2.966[a]	0.0506
	R x D	8	4.897	<1	
	Error	135	5.410		
Bob's willingness to participate in another experiment	R	2	60.515	5.406[b]	0.0561
	D	4	7.458	<1	
	R x D	8	10.423	<1	
	Error	135	11.194		

[a] $p < .025$
[b] $p < .01$
[c] $p < .001$

variables, one in each measure, emerged as statistically significant main effects, while accounting for very little of the variance. These four significant effects are discussed briefly below.

The description source produced a significant effect on three measures: how interesting Bob found the motor tasks ($F = 9.072$, df 4/135, $p < .001$, $\omega^2 = .18$), and how valuable the experiment was as a learning experience ($F = 3.706$, df 4/135, $p < .01$, $\omega^2 = .07$) and as a scientific investigation ($F = 2.966$, df 4/135, $p < .025$, $\omega^2 = .05$). The description source accounted for the most variance (17%) on the task interest measure, and for lesser amounts of variance (7% and 5%, respectively) on the second and third measures. In each case most of the remaining variance cannot be accounted for by factors measured in this study. The description condition means for the first three dependent measures are presented in Table 12. Comparison of means revealed significant differences only when the BRIEF description was one of the means in the comparisons. On the task interest measure, the BRIEF condition sponsored higher estimates than any other description treatment ($ps < .01$ for the JONES I, JONES II, and E.A.HIGH conditions, $p < .05$ for the E.A.LOW condition). On the measure of the experiment as a learning experience, the BRIEF condition was significantly higher than the E.A.HIGH ($p < .01$) or E.A.LOW ($p < .05$) condition. Finally, subjects responded that the experiment was more valuable scientifically in the BRIEF than in the E.A.LOW condition ($p < .01$).

The general elevation of the BRIEF condition means on the first three dependent measures may be artifactual. While subjects were

Table 12. Description Condition Means for First Three Dependent Measures: Experiment II

Dependent Measures	Description Conditions				
	BRIEF	JONES I	JONES II	E.A.HIGH	E.A.LOW
Task interest					
mean	-0.72	-3.90	-3.67	-2.88	-2.63
s.d.	2.791	1.163	1.631	2.058	3.124
Experiment as a learning experience					
mean	5.32	4.28	4.18	2.95	3.20
s.d.	2.358	2.741	3.155	2.394	2.618
Scientific value of experiment					
mean	5.25	4.43	4.00	4.35	3.23
s.d.	2.200	2.341	2.580	2.097	2.285

informed that "most people found these tasks very dull and monotonous," they were asked about Bob Downing in particular. So some of the subjects may have chosen the illogical--but perhaps psycho-logical--alternative, deciding that Bob was an exception to the generalization and in fact did not find the tasks as boring as "most people" did. The information subjects received was severely abbreviated. If they either did not attend to or did not understand the little information they were given, their guesses of Bob's responses may have been in a "safe" region around the midpoint of the scales. Since the other subjects were in a better position to learn at least what the motor tasks were (and that these tasks sounded boring to the subjects themselves), their general choice of responses at the low end of the scales would have produced the statistical significance which was achieved with these measures.

In fact, from these three measures, there is no evidence that subjects in the other four description conditions learned any more about the experiment than that the tasks were dull, for no statistical significance obtained in comparisons between these four groups' means. For instance, the JONES I and JONES II conditions produced quite similar results (see Table 10), even though subjects in the latter condition were presented with information that Bob thought the tasks were very boring, and then changed his mind. The presence or absence of evaluation apprehension-arousing cues also was not reflected in the data.

One other bit of information was detected by the subjects, however. On the fourth dependent measure, Bob's willingness to participate in another, similar experiment, the reward factor was a significant, if

not a powerful effect ($F = 5.406$, df 2/135, $p < .01$, $\omega^2 = .056$). As illustrated in Table 13, the $20 reward level sponsored higher estimates than either the $1 or control conditions ($ps < .05$). Here an incentive effect may be involved. However, in the first experiment, no incentive effect was found, although the information that Bob agreed to perform the deception sponsored higher scores. Here, then, the mention of $20 may have elicited an increase in attention to the tapes, so that at least the final sentences of the counterattitudinal behavior description were perceived by the subjects.

Conclusions

The procedures used in Experiments I and II were identical, yet in the second experiment, there is no evidence to indicate that the description factor manipulations were noticed or comprehended by the subjects. Comparison of the protocols for the first and second experiments reveals some possible sources of this discrepancy in the effectiveness of the procedure. In Experiment I the four major concepts the subjects could use to determine their responses were 1) the nature of the motor tasks, 2) the alleged purpose of the experiment, 3) the nature of the counterattitudinal behavior, and 4) that Bob performed this behavior. At least two sentences were included in the protocol to communicate each of these elements. Redundancy and elaboration of detail characterized most of the sentences in the protocols. The PILIAVIN manipulation was also presented with some elaboration. The JONES manipulation was expressed in few words, yet it had a prominant position as the last

Table 13. Reward Condition Means for Measure of Bob's Willingness to Participate in Another Experiment: Experiment II

	Reward Conditions		
	$1	$20	None
mean	-0.76	1.12	-0.81
s.d.	3.256	3.407	3.307

sentence of the first paragraph, and was followed by a pause (designating the end of the paragraph) on the recording.

However, the JONES I and II and the E.A.HIGH and LOW conditions in the second experiment involved more concepts, presented with less redundancy and elaboration. The comprehension of these cues may have been reduced by the reading pace imposed by the tapes, which was not rapid, but would have precluded rereading of words not understood on the first perusal.

The results of Experiment II, since the dissonance effect was not obtained, cannot be used to disconfirm Bem's simulation support, as they were intended to do. Rather, they merely illustrate several problems the laboratory investigator may encounter, including lack of attention to the stimulus materials, careless responding, and, as stated in the conclusion to the first experiment, the misunderstanding that can occur when the subjects, being unaware of the experimenter's hypothesis, simply do not relate the stimulus elements to each other according to the scheme used by the experimenter to prepare those stimuli.

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