

expectancy-high performance subjects changed significantly more responses than the low expectancy-low performance subjects. This difference was significant at the .01 level. Since subjects in the two low-expectancy conditions of Waterman and Ford's experiment were equal in the amount of recall, their results do not account for the significant difference between these two conditions obtained by Aronson and Carlsmith.

Thus, although Waterman and Ford have presented evidence that there are differences in recall in this type of experimental situation, they have not demonstrated that Aronson and Carlsmith's findings can be satisfactorily interpreted

in terms of differential recall and the attempt of subjects to obtain a good score and improve a poor one.

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INDUCING BELIEF IN FALSE CONFESSIONS¹

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College Ss participated in individual experimental sessions disguised as research on lie detection. After crossing out specified words on a word list, each S was trained to utter true statements in the presence of a "truth light" and false statements in the presence of a "lie light." He was then required to state aloud that he had previously crossed out certain words and had not crossed out others. Half of these "confessions" were false, and each was made in the presence of 1 of the 2 lights. As predicted, false confessions in the truth light produced more subsequent errors of recall and less confidence in recall accuracy than either false confessions in the lie light or no confession at all.

An individual's beliefs and attitudes 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 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 characteristically set the occasion for telling the truth. Conversely, such control over an individual's beliefs and attitudes 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 (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. For example, just as a communicator is more persuasive to others if he appears to be free from coercion or if he is known to be receiving no payment for his communication, so too, it is found that he is more likely to persuade himself under such circumstances (Bem, 1965). In fact, it has been suggested that American prisoners of war in the Korean conflict came to believe in some of the false confessions they were induced to make partially because the threat of punishment for noncompliance was *not* present (Brehm & Cohen, 1962, pp. 286-298).

The present experiment explores this conjecture indirectly by attempting to verify the possibility that a false confession can effectively distort an individual's recall of his past behavior if the confession is emitted in the presence of cues previously associated with telling the truth. The design also permits a test of the hypothesis that cues previously associated with *lying* can create self-disbelief in *true* confessions, leading again to distortions in recall of the actual behavior. More generally, the experiment attempts

¹The laboratory facilities for this research were provided by Harlan L. Lane of the University of Michigan.

to extend to a new dependent variable the evidence that an individual's beliefs and attitudes are often based on observations of his own overt behavior and its apparent controlling variables. Although support for this proposition is now available for beliefs about external events, attitudes of many kinds, and self-judgments of hunger and emotional states (Bem, 1965), it has not been demonstrated that an individual's recall of his past behavior can be controlled by a manipulation of his current verbal behavior.

Each subject in the present experiment performs a word task in which he crosses out some words and not others. In the subsequent experimental session, he is trained to utter true statements in the presence of a colored light that we shall call the "truth light" and to make false statements in the presence of a second colored light that we shall call the "lie light." Each subject is then required to state aloud that he had previously crossed out certain words and had not crossed out certain others. Half of these required "confessions" are false, half are true, and each one is made in the presence of one of the two lights. After each confession, the subject attempts to recall whether or not he had actually crossed out the word. The main prediction is that false confessions emitted in the presence of the truth light will produce more errors of recall than either false confessions emitted in the presence of the lie light or no confession at all. A secondary, complementary, prediction is that true confessions emitted in the presence of the lie light may also produce errors of recall, since the visual cue "tells" the subject that his statement is false. It will be noted that each subject is his own control, and that each subject provides a complete replication of the experiment.

METHOD²

Six male and five female college students were hired for individual experimental sessions to "help us find out if certain aspects of the human voice can be used for purposes of lie detection." After being seated at a desk containing a microphone and desk lamp in a small acoustically tiled recording room, the subject was handed a list of 100 common nouns and an alphabetical list containing 50 of the words. The subject was told:

This is an experiment designed to see if certain aspects of the human voice can be used for purposes of lie detection. You will be given a number

² All the written stimulus materials and a detailed procedural description for this experiment are reproduced in full in the laboratory manual by Lane and Bem (1965). The experiment, as adapted there for use in experimental psychology courses, has now been replicated many times by student experimenters.

of things to say into the microphone, and I will take various measurements on your voice as you do this. First, however, I would like you to complete a preliminary task. You are to draw a line through each word on this word list that also appears in this alphabetical guide. Go through the word list only once, at your own speed, reading each word in turn and then checking to see if it occurs in the alphabetical guide.

After completing this task, the subject filled out an information form in order to "provide us with facts we can ask you about in testing lie detection." This 50-item form contained such questions as "What is your major field of study?" "Are you generally favorable to sororities and fraternities?" "What brand of toothpaste do you use?" etc. After obtaining the completed forms, the experimenter left the room, and all further communication with the subject was conducted with an intercom. The following training procedure was then employed to establish two lights as discriminative stimuli that would indicate that verbal behavior in the presence of the one was truth telling and in the presence of the other, lying. The subject was told:

I will now ask you questions one at a time from the information form that you have just filled out. After I ask you each question, the equipment will be turned on, automatically illuminating one of two colored lights in the ceiling fixture. You should then answer the question into the microphone. Whenever the green light is on, you are to answer the question truthfully; whenever the amber light is on, you should make up an untrue answer to the question and speak it into the microphone as convincingly and as naturally as possible. Your answers should be complete statements. For example, I will ask "What is your first name?" If the green light goes on, then you would answer "My first name is X," giving your real first name. If the amber light goes on, you would make up some other name. If you make a mistake or do not answer with a complete sentence, I will ask you the same question again.

The training procedure then proceeded as described. Half of the questions required true responses, and half required untrue responses. The two lights were reversed for some subjects: amber light for true responses; green light for false responses. At the end of the training session, the experimenter continued as follows:

You will now make statements concerning some of the words you saw earlier. When I ask you to state that you crossed out a particular word—for example, if I say "Did-~~TREE~~"—you should wait until the equipment is turned on and then make a statement of the form "I did cross out the word ~~TREE~~." If I ask you to deny having crossed out a word—"Did not-~~TREE~~"—you should say "I did not cross out the word ~~TREE~~." Do not begin your statement until the equipment has been

turned on as indicated by the two lights which will continue to flash on and off in random sequence.

The procedure then proceeded as described. Using a predetermined schedule, the experimenter announced a word and instructed the subject either to state that he had or that he had not crossed out the word previously. One of the two colored lights was then illuminated; the subject made his "confession"; the colored light was turned off, and the white desk lamp was turned back on. After each "confession," the subject entered the word onto a sheet of paper, indicated whether he recalled crossing out the word or not crossing out the word previously, and marked how confident he was in the accuracy of his recall using the following scale: 1, not sure at all; 2, slightly sure; 3, moderately sure; 4, quite sure; 5, absolutely sure.

Fifty words from the word list were employed, 10 in each of the following conditions: false confession-truth light, false confession-lie light, true confession-truth light, true confession-lie light, control (recall only; no confession). Half of the words in each condition had actually been crossed out; half had not been crossed out. A postexperimental questionnaire assessed the subject's awareness of any effects of his confessions or the lights on his recall and checked on the success of the minor deception employed. Finally, each subject was paid for his participation and told the true purpose of the experiment.

This procedure, then, assessed the control of recall exercised by overt verbal statements emitted in the presence of two discriminative stimuli, one of which had a history of pairing with true responses, the other with false responses.

RESULTS AND DISCUSSION

The major predictions are that false statements emitted in the presence of the truth light will produce more errors of recall than either false statements emitted in the presence of the lie light or no statement at all. The first column of Table 1 compares the number of recall errors made in these two light conditions with each other and with recall errors for the 10 control words which the subjects were simply asked to recall. One-sample *t* tests based on difference scores for each subject test these one-tailed hypotheses.

It is seen that the hypotheses receive strong support. False statements made in the presence of the truth light lead to significantly more recall errors than either a false statement in the presence of the lie light or no confession at all. The consistency of the effect is revealed by the fact that none of the 11 subjects made more recall errors in the lie-light condition than in the truth-light condition ($p < .001$ by a one-tailed sign test), and only 2 of the subjects made

TABLE 1
RECALL ACCURACY AND CONFIDENCE RATINGS
FOLLOWING FALSE CONFESSIONS
($N = 11$)

| Condition | Mean number of recall errors (10 trials) | Mean ratings of confidence (range: 1-5) |
|-----------------|--|---|
| Truth light (A) | 3.82 | 3.21 |
| Lie light (B) | 1.82 | 3.46 |
| Control (C) | 2.46 | 3.64 |
| | <i>t</i> | <i>t</i> |
| A versus B | 5.27*** | 1.86* |
| A versus C | 2.02* | 3.03** |
| B versus C | .89 | 1.07 |

* $p < .05$.

** $p < .01$.

*** $p < .0005$.

more errors in the control condition than in the truth-light condition ($p = .033$).

After each trial, subjects rated their confidence in their recall accuracy on a 5-point scale, where a rating of 5 indicated absolute certainty. The second column of Table 1 displays these data for the three conditions. In general the conclusions are parallel to those yielded by the recall data: A false statement emitted in the presence of the truth light leads subjects to have decreased confidence in the accuracy of their recall, a judgment of their own behavior, it will be noted, that is accurate.

For 20 words, subjects were required to emit overt statements that were actually correct, 10 "true confessions" in each light condition. For the 10 words in the lie-light condition—where the light "contradicts" the validity of the statement—subjects made an average of 3.82 recall errors, a frequency equal to that found in the truth-light condition for false statements. For the 10 words in the truth-light condition—where the light "confirms" the correctness of their statement—subjects made an average of 2.36 recall errors. This difference between the two light conditions is significant ($t = 1.90$, $p < .05$, one-tailed). There is, then, some evidence that cues that have previously set the occasion for falsehood can raise doubts in the communicator himself about the validity of true statements he has uttered.

A few of the subjects indicated on the postexperimental questionnaire that they felt that the confessions and lights may have impaired their ability to recall correctly. Only one subject, however, suspected any systematic relation between the lights and the truth of the confession. She commented that "at the end I realized that

the amber light was on when I was telling the truth and the green when I was not." This is not correct, of course, since true and false statements in the two conditions were exactly counterbalanced. Her comment is, however, another datum indicating that the experimental treatments did, in fact, distort recall in the predicted directions. It would appear that any "awareness" in the present experiment is part of the outcome, not a cause of the experimental effects (cf. Bem, 1965).

In this experiment, the controlling manipulations are much weaker and the dependent variable much simpler than the conditions and behaviors involved in the brainwashing of prisoners of war. The present study was designed not to replicate such conditions, but to provide an existence proof for a phenomenon presumed to operate within them: the possibility that false statements can distort an individual's recall of his past behavior as a function of the credibility cues present at the time these statements are emitted. More generally, the positive results of the present experiment extend the evidence for

the proposition that an individual's beliefs and attitudes are often based on observations of his own overt behavior and its apparent controlling variables.

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MODIFICATION OF PSYCHOPHYSICAL JUDGMENTS AS A METHOD OF REDUCING DISSONANCE¹

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Dissonance reduction was measured in a situation requiring psychophysical judgments. 60 Ss estimated the height they lifted a heavy and a light weight which were both lifted the same vertical distance. Dissonance was aroused in 20 Ss by rewarding them little money for lifting a heavy weight and relatively more money for a considerably lighter weight. A further 20 Ss received reward in proportion to the weight lifted while the remaining 20 Ss were not rewarded. It was hypothesized that Ss who received reward disproportionate to weight lifted would reduce dissonance by underestimating the distance they lifted the heavy weight relative to the light. Results support the hypothesis.

Experimental evidence offered in support of the theory of cognitive dissonance has been critically evaluated by Chapanis and Chapanis (1964). One inadequacy of research in this area, they suggest, is the overcomplexity of experimental manipulations. The present investigation sought to test deductions from dissonance theory in the simplest possible experimental setting, and

where a minimum of measurement assumptions was necessary. In the experiment subjects were required to estimate the vertical height they lifted a heavy and a light weight. Both weights were in fact lifted to the same height. It was predicted from dissonance theory that subjects would underestimate the height they lifted a heavy weight when given little remuneration relative to the height they lifted a light weight when given greater remuneration. The question is: Do subjects modify psychophysical judgments when attempting to reduce dissonance?

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