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ATTITUDES ESTABLISHED BY CLASSICAL CONDITIONING¹

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OSGOOD and Tannenbaum have stated, "... The meaning of a concept is its location in a space defined by some number of factors or dimensions, and attitude toward a concept is its projection onto one of these dimensions defined as 'evaluative' " (9, p. 42). Thus, attitudes evoked by concepts are considered part of the total meaning of the concepts.

A number of psychologists, such as Cofer and Foley (1), Mowrer (5), and Osgood (6, 7), to mention a few, view meaning as a response—an implicit response with cue functions which may mediate other responses. A very similar analysis has been made of the concept of attitudes by Doob, who states, "*An attitude is an implicit response . . . which is considered socially significant in the individual's society*" (2, p. 144). Doob further emphasizes the learned character of attitudes and states, "The learning process, therefore, is crucial to an understanding of the behavior of attitudes" (2, p. 138). If attitudes are to be considered responses, then the learning process should be the same as for other responses. As an example, the principles of classical conditioning should apply to attitudes.

The present authors (12), in three experiments, recently conditioned the evaluative, potency, and activity components of word meaning found by Osgood and Suci (8) to contiguously presented nonsense syllables. The results supported the conception that meaning is a response and, further, indicated that word meaning is composed of components which can be separately conditioned.

The present study extends the original experiments by studying the formation of attitudes (evaluative meaning) to socially significant verbal stimuli through classical conditioning. The socially significant verbal stimuli were national names and familiar masculine names. Both of these types of

stimuli, unlike nonsense syllables, would be expected to evoke attitudinal responses on the basis of the pre-experimental experience of the Ss. Thus, the purpose of the present study is to test the hypothesis that attitudes already elicited by socially significant verbal stimuli can be changed through classical conditioning, using other words as unconditioned stimuli.

METHOD

Subjects

Ninety-three students in elementary psychology participated in the experiments as Ss to fulfill a course requirement.

Procedure

The general procedure employed was the same as in the previous study of the authors (12).

Experiment I.—The procedures were administered to the Ss in groups. There were two groups with one half of the Ss in each group. Two types of stimuli were used: national names which were presented by slide projection on a screen (CS words) and words which were presented orally by the E (US words), with Ss required to repeat the word aloud immediately after E had pronounced it. Ostensibly, Ss' task was to separately learn the verbal stimuli simultaneously presented in the two different ways.

Two tasks were first presented to train the Ss in the procedure and to orient them properly for the phase of the experiment where the hypotheses were tested. The first task was to learn five visually presented national names, each shown four times, in random order. Ss' learning was tested by recall. The second task was to learn 33 auditorily presented words. Ss repeated each word aloud after E. Ss were tested by presenting 12 pairs of words. One of each pair was a word that had just been presented, and Ss were to recognize which one.

The Ss were then told that the primary purpose of the experiment was to study "how both of these types of learning take place together—the effect that one has upon the other, and so on." Six new national names were used for visual presentation: *German, Swedish, Italian, French, Dutch, and Greek* served as the CSs.

These names were presented in random order, with exposures of five sec. Approximately one sec. after the CS name appeared on the screen, E pronounced the US word with which it was paired. The intervals between exposures were less than one sec. Ss were told they could learn the visually presented names by just looking at them but that they should simultaneously concentrate on pronouncing the auditorily presented words aloud and to themselves, since there would be many of these words, each presented only once.

¹ This study is part of a series of studies of verbal behavior being conducted by the authors at Arizona State College at Tempe. The project is sponsored by the Office of Naval Research (Contract Number NONR-2305 (00)), Arthur W. Staats, principal investigator.

R. The names were each visually presented 18 times in random order, though never more than twice in succession, so that no systematic associations were formed between them. On each presentation, the CS name was paired with a different auditorily presented word, i.e., there were 18 conditioning trials. CS names were never paired with US words more than once so that stable associations were not formed between them. Thus, 108 different US words were used. The CS names, *Swedish* and *Dutch*, were always paired with US words with evaluative meaning. The other four CS names were paired with words which had no systematic meaning, e.g., chair, with, twelve. For Group 1, *Dutch* was paired with different words which had positive evaluative meaning, e.g., gift, sacred, happy; and *Swedish* was paired with words which had negative evaluative meaning, e.g., bitter, ugly, failure.² For Group 2, the order of *Dutch* and *Swedish* was reversed so that *Dutch* was paired with words with negative evaluative meaning and *Swedish* with positive meaning words.

When the conditioning phase was completed, *Ss* were told that *E* first wished to find out how many of the visually presented words they remembered. At the same time, they were told, it would be necessary to find out how they *felt* about the words since that might have affected how the words were learned. Each *S* was given a small booklet in which there were six pages. On each page was printed one of the six names and a semantic differential scale. The scale was the seven-point scale of Osgood and Suci (8), with the continuum from pleasant to unpleasant. An example is as follows:

German
pleasant:—:—:—:—:—:—:—:unpleasant

The Ss were told how to mark the scale and to indicate at the bottom of the page whether or not the word was one that had been presented.

The Ss were then tested on the auditorily presented words. Finally, they were asked to write down anything they had thought about the experiment, especially the purpose of it, and so on, or anything they had thought of during the experiment. It was explained that this might have affected the way they had learned.

Experiment II.—The procedure was exactly repeated with another group of Ss except for the CS names. The names used were *Harry, Tom, Jim, Ralph, Bill, and Bob*. Again, half of the Ss were in Group 1 and half in Group 2. For Group 1, *Tom* was paired with positive evaluative words and *Bill* with negative words. For Group 2 this was reversed. The semantic differential booklet was also the same except for the CS names.

Design

The data for the two experiments were treated in the same manner. Three variables were involved in the

design: conditioned meaning (pleasant and unpleasant) CS names (*Dutch* and *Swedish*, or *Tom* and *Bill*); 2 groups (1 and 2). The scores on the semantic difference given to each of the two CS words were analyzed in a 2 x 2 latin square as described by Lindquist (4, p. 2) for his Type II design.

RESULTS

The 17 Ss who indicated they were aware either of the systematic name-word relationships were excluded from the analysis. This was done to prevent the interpretation that the conditioning of attitudes depended upon awareness. In order to maintain a counterbalanced design when these Ss were excluded, four Ss were randomly eliminated from the analysis. The resulting Ns were as follows: in Experiment I and 48 in Experiment II.

Table 1 presents the means and *SDs* of meaning scores for Experiments I and II. The table itself is a representation of the 2 X 2 design for each experiment. The please

TABLE 1
MEANS AND *SDs* OF CONDITIONED ATTITUDE SCORES

Experiment	Group	Names			
		<i>Dutch</i>		<i>Swedish</i>	
		Mean	SD	Mean	SD
I	1	2.67	.94	3.42	1.9
	2	2.67	1.31	1.83	.9
II	1	2.71	2.01	4.12	2.0
	2	3.42	2.55	1.79	1.0

Note.—On the scales, pleasant is 1, unpleasant 7.

TABLE 2
SUMMARY OF THE RESULTS OF THE ANALYSIS
VARIANCE FOR EACH EXPERIMENT

Source	Exp. I			Exp. II		
	df	MS	F	df	MS	F
Between Ss	1	7.52	4.36*	1	15.84	5.0
Groups	22	1.73		46	3.17	
Error						
Within	1	7.52	5.52*	1	55.51	10.0
Conditioned						
attitude	1	.02	.01	1	.26	
Names	22	1.36		46	5.30	
Residual	47			95		
Total						

* $p < .05$.

** $p < .01$.

³ The complete list of *CS-US* word pairs is not presented here, but it has been deposited with the American Documentation Institute. Order Document No. 5463 from ADI Auxiliary Publications Project, Photoduplication Service, Library of Congress, Washington 25, D. C., remitting in advance \$1.25 for microfilm or \$1.25 for photocopies. Make checks payable to Chief, Photoduplication Service, Library of Congress.

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extreme of the evaluative scale was scored 1, the unpleasant 7.

The analysis of the data for both experiments is presented in Table 2. The results of the analysis indicate that the conditioning occurred in both cases. In Experiment I, the F for the conditioned attitudes was significant at better than the .05 level. In Experiment II, the F for the conditioned attitudes was significant at better than the .01 level. In both experiments the F for the groups variable was significant at the .05 level.

DISCUSSION

It was possible to condition the attitude component of the total meaning responses of US words to socially significant verbal stimuli, without Ss' awareness. This conception is schematized in Fig. 1, and in so doing, the way the conditioning in this study was thought to have taken place is shown more specifically. The national name *Dutch*, in this example, is presented prior to the word *pretty*. *Pretty* elicits a meaning response. This is schematized in the figure as two component responses; an evaluative response r_{PV} (in this example, the words have a positive value), and the other distinctive responses that characterize the meaning of the word, R_P . The pairing of *Dutch* and *pretty* results in associations between *Dutch* and r_{PV} , and *Dutch* and R_P . In the following presentations of *Dutch* and the words *sweet* and *healthy*, the association between *Dutch* and r_{PV} is further strengthened. This is not the case with associations R_P , R_S , and R_H ,

since they occur only once and are followed by other associations which are inhibitory. The direct associations indicated in the figure between the name and the individual words would also in this way be inhibited.

It was not thought that a rating response was conditioned in this procedure but rather an implicit attitudinal response which mediated the behavior of scoring the semantic differential scale. It is possible, with this conception, to interpret two studies by Razran (10, 11) which concern the conditioning of ratings. Razran found that ratings of ethnically labeled pictures of girls and sociopolitical slogans could be changed by showing these stimuli while Ss were consuming a free lunch and, in the case of the slogans, while the Ss were presented with unpleasant olfactory stimulation. The change in ratings could be thought to be due to the conditioning of an implicit evaluative response, an attitude, to the CSs by means of the lunch or the unpleasant odors. That is, part of the total response elicited by the food, for example, was conditioned to the pictures or slogans and became the mediation process which in turn elicited the positive rating.

It should be stated that the results of the present study do not show directly that Ss' behavior to the object (e.g., a person of Dutch nationality) has been changed. The results pertain to the Ss' attitudinal response to the signs, the national names themselves. However, Kapustnik (3) has demonstrated that a response generalized to an object when the response had previously been conditioned to the verbal sign of the object. Osgood states,

The aggressive reactions associated with *Nazi* and *Jap* on a verbal level certainly transferred to the social objects represented under appropriate conditions. Similarly, prejudicial behaviors established while reading about a member of a social class can transfer to the class as a whole . . . (7, p. 704).

The results of this study have special relevance for an understanding of attitude formation and change by means of verbal communication. Using a conception of meaning as a mediating response, Mowrer (5) has suggested that a sentence is a conditioning device and that communication takes place when the meaning response which has been elicited by the predicate is conditioned to the subject of the sentence. The results of the present study and the previous one of the present authors

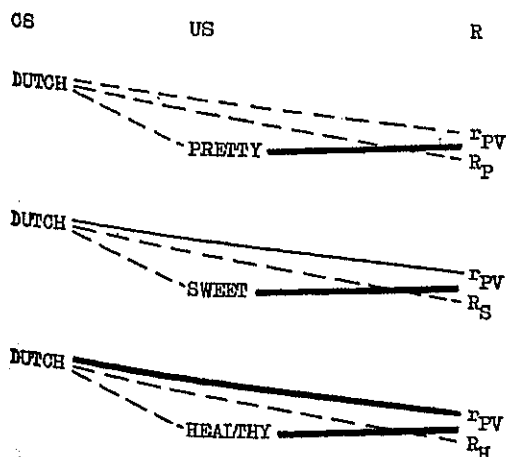


FIG. 1. THE CONDITIONING OF A POSITIVE ATTITUDE. THE HEAVINESS OF LINE REPRESENTS STRENGTH OF ASSOCIATION

(12) substantiate Mowrer's approach by substantiating the basic theory that word meaning will indeed condition to contiguously presented verbal stimuli. In the present study, the meaning component was evaluative, or attitudinal, and the CSs were socially significant verbal stimuli. The results suggest, therefore, that attitude formation or change through communication takes place according to these principles of conditioning. As an example, the sentence, "Dutch people are honest," would condition the positive attitude elicited by "honest" to "Dutch"—and presumably to any person called "Dutch." If, in an individual's history, many words eliciting a positive attitude were paired with "Dutch," then a very positive attitude toward this nationality would arise.

The reason for the group differences in each of the experiments is not clear. These differences could have arisen because there were actual differences in the Ss composing each group, or in some condition of the procedure occurring to one of the groups. Nothing the authors were aware of seem to indicate this as the explanation, and in the previous experiments of the authors (12) there were no group differences. Since in a 2 x 2 latin square the interactions are entirely confounded with the main effects, the group differences could also have arisen as a result of the interaction of the other two main effects (i.e., direction of conditioning and names).

SUMMARY

Two experiments were conducted to test the hypothesis that attitude responses elicited by a word can be conditioned to a contiguously presented socially significant verbal stimulus. A name (e.g., *Dutch*) was presented 18 times, each time paired with the auditory presentation of a different word. While these

words were different, they all had an identical evaluative meaning component. In Experiment I, one national name was paired with positive evaluative meaning and another was paired with negative evaluative meaning. In Experiment II, familiar masculine names were used. In each experiment there was significant evidence that meaning responses had been conditioned to the names without Ss awareness.

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