DOCUMENT RESUME

ED 062 660 CG 007 184

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| TITLE | Attitudes of Children Established by Classical Conditioning. |
| INSTITUTION | Tennessee Univ., Knoxville. |
| PUB DATE | 70 |
| NOTE | 13p. |
| EDRS PRICE | MF-$0.65 HC-$3.29 |
| DESCRIPTORS | *Attitudes; Behavioral Science Research; Changing Attitudes; *Childhood Attitudes; *Classical Conditioning; *Conditioning; *Educational Research; Language Research; Research; School Attitudes |

ABSTRACT

This study examined the attitudes of children established by classical conditioning. Subjects were 4th graders (26 males and 31 females). Each child was randomly assigned to either an experimental or a control group. A posttest-only design was used with positive and negative word associations presented to the experimental group, and neutral word associations presented to the experimental group, and neutral word associations presented to the control group. Data were collected from all subjects on a sematic differential scale. Results of this study indicated that classical conditioning of attitudes occurred in the experimental group, and that conditioning was effective without subject awareness. There was a further implication concerning the early development of attitudes, and the authors feel it is possible that the classical conditioning paradigm could make a significant contribution in the early development of attitudes of children. Further research is recommended to determine if the phenomenon of attitudinal change can be generalized to the elementary school system. (BW/Author)

# ATTITUDES OF CHILDREN ESTABLISHED BY CLASSICAL CONDITIONING

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Research concerned with the classical conditioning of attitudes has been conducted with ambiguous results. The ambiguity lies in the interpretation of results by the various investigators. For example, results of these studies are attributed to such factors as the conditioning treatment, contingency awareness, and demand awareness. Different investigators interpret their results in different ways which lends to the present ambiguity. The mainstream of criticism and doubt among investigators has been directed at subject (S) sophistication and the effect of this sophistication on the results obtained.

Staats and Staats (1958) conducted a study employing classical conditioning of attitudes. This procedure was used to change attitudes of 93 students in a college elementary psychology course. The Ss were presented national names which were paired with words having either evaluative meaning or no systematic meaning. National names (e.g., Swedish, Italian) were conditioned stimulus words (CS words), and words with evaluative meaning were unconditioned stimulus words (UCS words). Each CS word was presented by slide projection for approximately five seconds, and approximately one second later the experimenter (E) orally presented the UCS word with which it was paired. The Ss' task was to learn the words presented in the two different ways. Ss were "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" (Staats and Staats, 1958, p. 37).

The conditioning phase of the Staats' study consisted of two experiments with two groups used in each experiment. In Experiment I the first group was presented with six national names. Dutch was paired with words having positive meaning (e.g., gift, happy), and Swedish was paired with words having negative meaning (e.g., bitter, failure). The remaining four national names were paired with words having no systematic meaning. The reverse was true for the second group. Dutch was paired with negative words, and Swedish was paired with positive words. The procedure for Experiment II was identical to that of Experiment I, except that male names (e.g., Harry, Tom) instead of national names were used as CS words.

After the conditioning phase in each experiment, the following instructions were immediately given to all Ss by E: "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 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" (Staats and Staats, 1958, p. 38).

When Ss completed this evaluation form, they were also tested on the auditorily presented words and were asked to make comments on anything they thought about the experiment, especially the purpose of it. Seventeen Ss were excluded from the analysis, because they indicated an awareness of name-word relationship. The results of the remaining sample indicated that conditioning had occurred at the .05 level of significance or better for both experiments. The researchers concluded that "there was significant evidence that meaning responses had been conditioned to the names without S awareness" (1958, p. 40).

The conclusions reached by Staats and Staats were challenged by Cohen (1964) and Insko and Oakes (1966). These investigators took issue with the Staats' statement that conditioning occurred without S awareness. They replicated classical conditioning studies conducted by Staats and Staats and concluded that Ss did possess a contingency awareness between the CS and UCS word associations. Results of their studies indicated that conditioning did not occur without S awareness.

Page (1968) extended the concept of contingency awareness. He suggested that Ss were aware of the purpose of the experiment and must decide whether or not to cooperate with E and respond in the way E demanded. He used the term "demand awareness" when he referred to S awareness and the cooperative role of S.

In 1969 Page conducted a study to determine the effects of demand awareness in a classical conditioning experiment. The design was similar to that conducted by Staats and Staats (1958) but also included subject sophistication as an independent variable. Page felt that S sophistication might facilitate demand awareness.

After replicating the Staats' conditioning experiment and measuring for demand awareness, Page used an extensive post-experimental questionnaire. This questionnaire included 17 items concerned with the purpose of the experiment. The results obtained by Page indicated that sophisticated Ss showed more conditioning than naive Ss and that demand awareness was present. Page contended that the majority of Ss decided to cooperate with E, and he felt that this demand awareness helped produce the conditioned response (Page, 1969). Page further contended that Staats and Staats (1968) had conducted a deception experiment and that their results should not be interpreted as results of classical conditioning.

The interpretation of results by Page was challenged by Staats (1969). Staats specifically raised issue with the questionnaire used by Page in the post-experimental phase of the study. Staats felt that the questionnaire used by Page "actually demands that the subject indicate that he saw through the purpose of the experiment" (Staats, 1969, p. 189).

The majority of Ss used in research of classical conditioning of attitudes were selected from a college population with many of the Ss enrolled in introductory psychology courses. Other settings and age groups have seldom been utilized. An elementary school age population may provide data that may help alleviate some of the ambiguity already present in the area of attitudinal change. No attempt has been made to investigate whether or not the phenomenon of classical conditioning exists for children. This study is an attempt to explore this phenomenon and to add to the small amount of research available on attitude development of children. The specific purpose of this study was to determine if attitudes of children can be changed through classical conditioning. The following hypotheses were tested: 1) A significant difference will be obtained between the control group and the experimental group. The experimental group will show effects of conditioning, and the control group will show no effects of conditioning; and 2) A significant difference will be obtained between boys and girls.

## METHOD

### Subjects

There were 57 Ss, 26 boys and 31 girls, utilized in the study and all were in the fourth grade. There were three fourth-grade classes, and a random assignment placed all the fourth-graders (that were available on the day of the study) into either the experimental group or the control group.

## Experimental Design

The design for the study was a posttest-only design with a control group. The design paralleled Design 6 as outlined by Campbell and Stanley (1969). This design consisted of a random assignment of Ss to a control group and an experimental group. The experimental treatment was administered to the experimental group followed by a posttest. The control group did not receive the experimental treatment but was administered a posttest.

## Procedures

The procedure employed was a general replication of the Staats and Staats (1958) study. The study used two groups, an experimental group and a control group. Two experiments were conducted with two phases in each experiment. Experiment I was the administration of conditioning treatment procedures to the experimental group (phase one) followed by a posttest (phase two). Experiment II consisted of the administration of the nonconditioning treatment to the control group (phase one) followed by a posttest (phase two).

A pilot study conducted earlier by E indicated that Ss of the same age were able to understand the words used and the instructions given. In the present study E told all Ss that they would be doing an exercise to see if they could learn words given to them in two different ways. Ss were told that E would hold up a card with a name on it and that they could learn these names by just looking at the cards. Ss were also told that E would say aloud and that they should repeat the word aloud and to themselves. E stated that they should try to concentrate on the name on the card and the word E said aloud at the same time. E explained to the Ss that the purpose of the exercise was to see how two types of learning take place and to see if and how they affect each other.

After instructions and the purpose of the experiment were given by E, four practice trials were administered to the Ss in both the experimental group and the control group.

Experiment I. CS words were presented visually on 8 1/2 by 11 inch cards. These words were male names--Johnny, Billy, Jimmy, Carl, Joe, and Richie. The CS words were randomly shown for five seconds. Immediately following this, E pronounced the UCS word which was paired with each CS word. The Ss repeated each UCS word aloud after E pronounced them.

Positive meaning words, for example, honest, strong, were paired with the CS word Billy. Negative meaning words, for example, ugly, terrible, were paired with the CS word Joe. The other four CS words were paired with words having neutral evaluative meaning, such as cup and street. Each CS word was presented 10 times in random order and was always paired with a different UCS word. Ten conditioning trials for Billy and 10 conditioning trials for Joe were presented. Sixty UCS words were used.

The post-experimental phase of the study was begun immediately after the termination of the conditioning phase. A two-page evaluation form consisting of seven items was given to all Ss. Six items consisted of two parts. In the first part two names were given with a box next to each name. One name was visually presented by E during the treatment phase, and the other was not. The Ss were asked to place a mark in the box next to the name visually presented by E. This was done as a check to insure that Ss were rating the correct name. The second part of each item contained a seven-point semantic differential scale with a continuum from good to bad. Refer to Osgood et al. (1957).

The Ss were told that it would be helpful for E to know how they felt about each name they had checked. They were asked to place a mark in the box that showed how they felt about each name.

The seventh item was a question concerning the purpose of the experiment. The Ss were asked: What was the purpose of the exercise?

Experiment II. The procedures for the control group were identical to those in Experiment I with one exception. All CS words in this experiment were paired with UCS words having neutral evaluative meaning. Conditioning trials were not presented to the control group. The post-experimental phase of this experiment was identical to Experiment I.

## RESULTS

Data for this study was obtained for 57 Ss from the post-experimental evaluation forms. There were 36 Ss (16 boys and 20 girls) in the experimental group and 21 Ss (10 boys and 11 girls) in the control group.

The semantic differential scale was scored seven for the good-extreme evaluative scale and one for the bad-extreme evaluative scale. The scores for the semantic differential scale for the positive and negative CS words were analyzed separately using a 2 x 2 factorial analysis of variance as described by Glass and Stanley (1970). The unweighted means analysis technique was used because of disproportional cells.

The means and standard deviations (SD) of the positive and negative CS words are presented in Table 1. Table 2 presents the results of the analysis of the data for the positive and negative CS words.

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Insert Tables 1 and 2 about here

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The results of analysis of the data indicated that conditioning did occur in the experimental group for both CS words. Conditioning was significant at the .05 level for the positive CS word and was significant at the .01 level for the negative CS word. No significant differences were found between boys and girls.

Item number seven on the evaluation form asked the Ss what the purpose of the experiment was. Answers to this item indicated that Ss were not aware of the purpose of the experiment. Responses to this question were grouped into nine general areas based on the answers given by the Ss. These responses are presented in Table 3.

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Insert Table 3 about here

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## DISCUSSION

The results of this study indicate that the phenomenon of classical conditioning can be applied to children. Hypothesis 1 stated that a significant difference would be obtained between the experimental and the control groups. This hypothesis was accepted. Hypothesis 2 stated that a significant difference would be obtained between boys and girls. This hypothesis was rejected.

This study assumed that fourth-grade students would be naive and unsophisticated Ss. Answers to item number seven on the evaluation form indicated support of this assumption. No S gave any indication of a knowledge of word associations, and no S exhibited any indication of a conditioning, demand, or contingency awareness on the evaluation form.

The evaluation of S sophistication refutes the conclusions made by Page (1969) and Insko and Oakes (1966). It appeared that the Ss were not aware of any demand awareness that Page purported to be present, nor did the Ss possess any contingency awareness as reported by Insko and Oakes. These authors indicated that the conclusions drawn by Staats and Staats (1958) were erroneous. They indicated that the results obtained by Staats and Staats were due to S sophistication rather than conditioning. The results of this study indicate that S sophistication may not be a factor. This study supports the conclusions of Staats and Staats, i.e.,

that the results were a consequence of the conditioning treatment without S awareness.

The results of this study have implications concerning the early development of attitudes. The classical conditioning paradigm may make a significant contribution in the early development and formation of attitudes of children. Further research in this area should be conducted to determine if the phenomenon of attitudinal change can be generalized to our elementary school system. This study also indicated that children in the 9-10 year age group were found to be naive Ss. Further research should be conducted to determine at what ages do Ss cease to be naive.

It appears that the phenomenon of classical conditioning of attitudes may be applicable to children in the experimental setting. It may also be possible that this phenomenon may occur naturally by association in the educational setting and in the socialization process. Little research has been done with attitude development in these settings. These areas needs to be explored further.

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TABLE 1

Means and Standard Deviations of the
Negative and Positive CS Words

| | POSITIVE CS WORD | | NEGATIVE CS WORD | |
|---|---|---|---|---|
| | Experimental Group | Control Group | Experimental Group | Control Group |
| **Boys** | | | | |
| $\bar{X}$ | 6.00 | 4.60 | 3.19 | 4.10 |
| SD | 1.06 | 1.85 | 2.83 | 1.06 |
| **Girls** | | | | |
| $\bar{X}$ | 5.60 | 5.27 | 2.50 | 5.09 |
| SD | 1.20 | 1.35 | 2.27 | 1.62 |

TABLE 2

Summary of the Results of the Analysis of Variance for the Negative and Positive CS Words

| Source | df | SS | MS | F |
|---|---|---|---|---|
| Positive CS Word | | | | |
| Sex | 1 | 0.03 | 0.03 | 0.207 |
| Effects of Conditioning | 1 | 0.73 | 0.73 | 5.03* |
| Interaction | 1 | 0.29 | 0.29 | 2.00 |
| Within | 53 | 101.38 | 145.00[a] | |
| Negative CS Word | | | | |
| Sex | 1 | 0.03 | 0.03 | 0.08 |
| Effects of Conditioning | 1 | 3.07 | 3.07 | 7.91 |
| Interaction | 1 | 0.71 | 0.71 | 1.83** |
| Within | 53 | 271.00 | 0.388[a] | |

* $p < .05$

** $p < .01$

[a] MS within is not equal to the SS divided by df because a constant is used in the computational procedure for disproportional cells. See Glass and Stanley, 1970, pp. 441-443.

TABLE 3

S Response to the Purpose of the Experiment

| Responses | Experimental | Control |
|---|---|---|
| To Remember and Learn Words in Two Ways | 18 | 1 |
| To Learn About Words | 0 | 2 |
| To See How Well We Can Remember | 6 | 4 |
| To See How Much We Know | 1 | 1 |
| To See How We Feel About Other Names | 0 | 1 |
| To Pronounce Words After E | 2 | 1 |
| Do Not Know | 0 | 3 |
| Miscellaneous Unrelated Answers (e.g., yes, good) | 7 | 5 |
| No Answer Given | 2 | 3 |