DOCUMENT RESUME

ED 069 427 PS 006 169

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TITLE Effectiveness of Social Reinforcement as a Function of Children's Familiarity with the Experimenter.
NOTE 11p.

EDRS PRICE MF-$0.65 HC-$3.29
DESCRIPTORS Cognitive Processes; Data Analysis; Grade 1; Grade 5; Hypothesis Testing; *Reinforcement; Research; *Response Style (Tests); *Social Reinforcement; *Testing

ABSTRACT

This study was designed to examine the effectiveness of social reinforcement as a function of familiarity with the adult agent administering the reinforcers. First and fifth grade children were tested in a marble dropping task on two successive days. On the second day half of the children at each grade level were tested by the same experimenter (familiar condition) while a different experimenter (stranger condition) tested the other half. First graders were more responsive to social reinforcement provided by a familiar adult than by a stranger. Fifth graders tended to be equally responsive to social reinforcement from either a familiar adult or a stranger. These data failed to provide direct support for either the valence or arousal hypotheses of social reinforcement effects. A cognitive interpretation was suggested to account for the data. Problems associated with experimental designs and dependent measures in studies assessing the effectiveness of social reinforcement were discussed. (Author)

Effectiveness of Social Reinforcement as a Function of Children's Familiarity with the Experimenter

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Considerable evidence exists to suggest that adults' social reinforcements can function effectively in controlling children's behavior. Recent attempts to clarify the nature of the conditions under which this relationship is enhanced or attenuated have implicated the role of prior experience. As Massari (1971) has indicated such relativistic conceptualizations represent a major change in orientation. The effectiveness of social reinforcement has been found to be a function of the experimental setting in which the reinforcers are presented.

One attempt to clarify the relationship between the effectiveness of social reinforcement and prior experience is the valence hypothesis of Zigler and his associates. According to the valence hypothesis the effectiveness of social reinforcement is a function of the generalized attitude or valence that the subject has towards the agent administering social reinforcement (Berkowitz, Butterfield and Zigler, 1965; Berkowitz and Zigler, 1965; Irons and Zigler, 1969; McCoy and Zigler, 1965). Previous positive interactions with the reinforcing agent should increase his effectiveness as a social reinforcer relative to no prior interactions or negative interactions. This position has received considerable support (Berkowitz, Butterfield, and Zigler, 1965; Berkowitz and Zigler, 1965; Irons and Zigler, 1969). The general experimental procedure involves manipulating the familiarity of the experimenter (familiar-positive, familiar-neutral, or stranger) or portraying the experimenter as "good" or "bad." The effectiveness of social

reinforcement with children is then assessed in a free operant task (marble-sorting) in which a no-reinforcement (baseline) period is followed by a reinforcement period on a fixed ratio or interval schedule. The task is then administered again after a delay. The dependent variables assessed are (1) persistence at the task (2) rate changes comparing mean performance under reinforcement with baseline.

A basic question which studies investigating the valence hypothesis have dealt with is the effect of familiarity with the adult reinforcing agent on children's responsiveness to social reinforcement. Using the general procedures outlined above studies [illegible] have experimentally manipulated familiarity with the reinforcing agent and found adult strangers to be less effective social reinforcing agents than familiar adults. For example, McCoy and Zigler (1965) reported that children persisted longer in the marble sorting task with familiar adults than strangers. Similar results were obtained in the work of Berkowitz, Butterfield, and Zigler (1965) and Berkowitz and Zigler (1965). However when dependent measures other than task persistence were examined no clear trends as a function of familiarity were found. That is, when changes in response rate were examined, familiarity with the experimenter and his effectiveness as a reinforcing agent were unrelated (Berkowitz, Butterfield, and Zigler, 1965; McArthur and Zigler, 1969).

One study (Walters and Ray, 1960) has provided evidence contradictory to the valence hypothesis. Walters and Ray (1960) reported that adult strangers were more effective social reinforcing agents than familiar adults. Social reinforcement was more effective if children were brought to the experimental room by an adult male stranger compared to a familiar female adult (school secretary). These results were interpreted in terms of an

arousal hypothesis. Children exposed to a stranger were thought to be more emotionally aroused and more susceptible to subsequent adult reinforcement. Any emotionally arousing condition, it was hypothesized, would increase the effectiveness of social reinforcement. One major problem with this study is that familiarity and sex are confounded.

The purpose of the present study was to try and clarify the relationship between effectiveness of adult social reinforcement and familiarity with the agent administering the reinforcers. Adult females who were either strangers or familiar to first and fifth grade children served as experimenters. Accordingly to the valence hypothesis familiar adults should be more effective social reinforcers than strange adults. According to the arousal hypothesis familiar adults should be less effective social reinforcers than strangers. Neither hypothesis suggests that age will influence children's responsivity to social reinforcement.

METHOD

Subjects -- Thirty-six first graders (18 boys and 18 girls) and 32 fifth graders (22 boys and 10 girls) from the Oswego Campus School served as subjects in this study. The subjects were from middle-class homes and of average intelligence.

Experimenters -- The experimenters were three undergraduate female volunteers enrolled in psychology courses.

Apparatus -- The apparatus was a two-hole marble dropping box 16 X 16 X 8 inches. The holes were 3/4 inch in diameter and located three inches from each other. To the right of the box was a small bin 8 X 10 inches in which 850 marbles of various colors were placed. The experimenter sat to the left of the subjects and recorded responses manually.

Procedure -- The children were tested individually in a small research room in the school on two successive days. Half of the children at each age were tested by the same experimenter on both days while a different experimenter (stranger) tested the other half on the second day. The following instructions were presented to each child on both the first and second day: "We're going to play a game. Let me tell you about it. This is called the marble game. See the marbles? Let me show you how to play it. The marbles go in these holes. You can put any marble in any hole. These are the marbles and these are the holes. Pick up the marbles one at a time from the box and put them in the holes. Let me show you how to do it. (The experimenter demonstrated by placing a marble in each of the holes). O. K. ? I'll tell you when to stop. Now you can play the game."

During the first minute a baseline rate of responding was established and the experimenter remained neutral. After this initial period, the experimenter provided verbal statements of approval twice a minute at 15 and 45 seconds within each minute, for a total of three minutes. Five statements were used during the three minute period of social reinforcement: "You're doing well; That's very good; You really know how to play this game very well; That's fine; You're really good at this game." These statements were presented randomly to each child and were the only form of interaction permitted during the three minute reinforcement period with the following exceptions. If a child failed to respond for any 30 second period the experimenter said "I'll tell you when to stop." If a child picked up a handful of marbles the experimenter said, "Put them in one at a time." If either of these two instructions had to be repeated to the same subject, that child was eliminated from the experiment. In addition, any interruptions or intrusions in the

experimental procedure resulted in the elimination of that subject from the study. A total of 8 children were eliminated from the experiment based on these three conditions.

Response Measures -- Two response measures were obtained. The number of marbles dropped during the first minute of Day 1 served as a baseline rate of responding. The baseline rate was then taken from the number of marbles inserted during each succeeding minute of the experiment and yielded seven difference scores for each subject. A repeated measures analysis of variance was computed on these scores. Scheffé tests were used to assess differences between individual means.

Figure 1 presents the mean responses per minute over baseline during each of the seven minutes for each of the four experimental groups (2 Ages X 2 Conditions on Day 2). Data for the two age groups are placed on the ordinate to reflect the overall rate of response.

On Day 1 the rate of marble dropping increased significantly during the experimental session. For first graders, this increase was confined to the first minute following baseline, which is indicated by analysis of variance of the raw scores rather than the difference scores. For fifth graders, a Scheffé test indicated that there was a significant increase in rate of marble dropping during the three minutes of reinforcement.

The data obtained on Day 2 are of principal interest. First graders performance was significantly affected by having a stranger (different experimenter) or a familiar adult (same experimenter) on Day 2. The F for the Reinforcement Condition X Minute interaction was 3.49; ($df = 6.192$; $p < .01$). That is performance was suppressed during non-reinforcement on Day 2 with a different experimenter in contrast to the same experimenter. This suppression

was maximal when reinforcement was presented initially and then decreased. By the third minute of reinforcement all first graders were responding at the same level of about 25 responses per minute.

The performance of fifth graders was different. On Day 2 fifth graders began responding at the terminal level of Day 1. Although the means increased over the following three minutes, this change was not significant. There was a tendency toward faster responding with a stranger (different experimenter) compared to a familiar adult (same experimenter) but this difference was not sufficient to attain significance. By the end of the experiment, fifth graders increased their rate of responding from 30 to 38 marbles per minute.

There was no evidence of any sex effect in the data of fifth graders. First grade girls, however, made greater performance increments than did first grade boys ($F = 7.86$; $df = 1.32$; $p < .01$). This variable did not interact with familiarity with the experimenter or reinforcement period.

DISCUSSION

The age differences in response to social reinforcement by a strange or familiar adult were unanticipated. These developmental differences provide no uniform support for either the valence hypothesis or the arousal hypothesis. According to the valence hypothesis children who are exposed to a stranger (different experimenter) on Day 2 should be less responsive to social reinforcement compared to children who are tested by a familiar adult (same experimenter). This was found for first graders but not for the older children. Fifth graders were fairly equal in social responsiveness whether a familiar adult or a stranger administered the task on Day 2. According to the arousal hypothesis switching experimenters on Day 2 should increase the social responsiveness of children in this condition. Although there was a

tendency for this to hold for fifth graders, the differences were not significant. More importantly exactly the reverse was found for first graders. Younger children were more responsive to social reinforcement from familiar adults than from strangers. Taken together, these data imply that the effectiveness of social reinforcement is mediated in part by developmental variables over and above degree of familiarity.

One developmental variable to consider is a cognitive one. Perhaps fifth graders performance in the present study is fairly independent of adult's comments by Day 2. That is, fifth graders may have the ability to assess their performance independent of an adult's verbal evaluation. Fifth graders may have standards which they can use to judge their task performance apart from the feedback provided by adult social reinforcement. This seems possible since they have participated in the task before and since the task is quite simple. It apparently makes little difference for the fifth graders if a stranger or a familiar adult administers the task on Day 2. First graders, however, appear more dependent on the feedback provided by adults social reinforcement. They seem to be using the social evaluation as an important index to their task performance. Thus adult social reinforcement is an important factor for first graders in evaluating their task performance and the adult himself assumes more importance than for fifth graders.

If we examine the age differences together another interpretation is possible. Perhaps first graders find a strange adult fearful while fifth graders find the same conditions stimulating. Because of the simplicity of the task, fifth graders may need more variety to maintain their interest than first graders. This suggestion is similar to the inverted U-shaped curve reported by Berlyne (1960) and others for curiosity and exploratory behavior.

Thus whether a stranger vs. a familiar adult is more or less effective as a social reinforcer is in part a function of age.

Finally, the present study suggests that the dependent variable as well as the experimental task employed are important factors in studies assessing the effectiveness of social reinforcement. As Zigler has indicated in his studies persistence and rate change are not perfectly correlated (r = .62). The present study used a rate change measure for each minute of the experiment and a more simple marble dropping task than sorting or preference indices. Perhaps various experimental tasks and response measures are differentially sensitive to social reinforcement effects. It is clear that a satisfactory measure of social reinforcer effectiveness has not been obtained (Parton and Ross, 1965; 1967; Stevenson, and Hill, 1966; McArthur and Zigler, 1969). With Zigler's experimental design persistence seems to be a more sensitive indicator of social reinforcement effects. In the present study, by breaking down the rate change measure, and by using a simpler task there is evidence that rate can be a sensitive index of social reinforcement effects.

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Footnotes

[1]Portions of this paper were presented at the Midwestern Psychological Association Meetings, Cleveland, 1972.

[2]Appreciation is expressed to the students and staff of the Oswego Campus School for the assistance in conducting this study.

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