

# Agreeing attitudinal statements as positive reinforcers in instrumental conditioning\*

JOHN LAMBERTH, University of Oklahoma, Norman, Okla. 73069

CHARLES GOUAUX, University of Missouri, St. Louis, Mo. 63121

and

JOHN DAVIS, University of Oklahoma, Norman, Okla. 73069

The effects of partial reinforcement (PR) in both acquisition and extinction were investigated. Using attitudes as reinforcers in an instrumental conditioning situation, the PR group proved to be more resistant to extinction than a continuously reinforced (CRF) group. More importantly, the PR group showed faster asymptotic acquisition speeds than did the CRF group, indicating that the present situation is an analog to reward conditioning. Thus, similar attitudes may be seen as positive, not negative, reinforcers.

The effect of similar attitudes upon attraction has been extensively investigated with the implicit or explicit assumption that such statements function as positive reinforcers (Byrne, Young, & Griffitt, 1966; Clore, 1966; Golightly & Byrne, 1964; Lamberth & Craig, 1970). However, recent evidence (Lamberth, Gouaux, & Padd, in press) indicated that similar attitudes do not elicit positive affect. This result suggested the possibility that similarity is not positively reinforcing, but serves only to terminate some as yet unspecified noxious stimulation. The question of whether similar attitudes are positively or negatively reinforcing has rather far-reaching implications as to the reason men cluster in social groupings. It is possible that stimuli such as attitudes are positively rewarding and thus draw men into social groups. However, the situation is less optimistic if similarity merely terminates some noxious stimulus and is reinforcing only because it fills this role. If this is the case, it seems that individuals could escape the noxious stimulus (assuming it is something akin to a fear of being disagreed with) by becoming hermits.

The effects of disagreement in instrumental conditioning situations have been extensively investigated by Weiss, and his associates (Lombardo, Weiss, & Buchanan, 1972; Weiss, Boyer, Colwick, & Moran, in press; Weiss, Lombardo, Warren, & Kelly, in press). This ingenious series of investigations has shown that

disagreement induces a noxious drive state which is terminated by agreement. The situations they have studied have clearly been escape conditioning. However, the effects of similarity itself, without the specific inducement of disagreement, may be analogous to either escape or reward conditioning.

Indirect evidence for the assumption that positive stimuli are positively reinforcing was also reported by Lamberth, Gouaux, & Padd (in press). They found that positive affect was elicited by positive personal evaluations. In attraction research, a quantitative difference between attitudes and evaluations has repeatedly been demonstrated (Byrne & Lamberth, 1971; Byrne & Rhamey, 1965; Clore & Baldrige, 1970), but no qualitative difference has been discovered. Thus, it seemed possible that similar attitudes are positively reinforcing and that the semantic differential used by Lamberth, Gouaux, & Padd (1971) was not sufficiently sensitive as an affective measure to detect an increase in positive affect following agreement.

Of the several situations in which instrumental reward and escape conditioning would be expected to produce differential results, possibly the most clear-cut one is the partial reinforcement acquisition effect. In reward conditioning, partial reinforcement facilitates asymptotic response speed in acquisition (Amsel, 1958; Weinstock, 1958; Spence, 1960) and impairs asymptotic acquisition response speed in escape conditioning (Bower, 1960). This difference between escape and reward conditioning allowed us to design a rather clear-cut experiment to provide an answer to the question of whether similar attitudes serve as positive reinforcers or as terminators of

noxious stimuli, i.e., negative reinforcers. On the basis of the results reported by Lamberth, Gouaux, & Padd (in press), it was hypothesized that similar attitudes were positive reinforcers and that a group given partial reward would show faster asymptotic acquisition speeds than a group given continuous reinforcement.

Only a very few studies have been reported in which attitudes served as reinforcers in an instrumental conditioning situation (Lamberth, 1971; Lamberth & Gay, 1972). To date, there has been no published report of the familiar partial reinforcement extinction effect (PREE), i.e., a group given partial reinforcement (PR) is more resistant to extinction than a group given continuous reinforcement (CRF). Prior to using acquisition results to infer the nature of our reinforcers, it is imperative that we show the familiar PREE. It was further hypothesized that a PR group would be more resistant to extinction than a CRF group.

## METHOD

The Ss were 26 University of Oklahoma undergraduates who participated as part of a course requirement.

The Ss were divided into two groups, one of which received 20 trials of CRF and one of which received 20 trials of 50% PR on one of two random PR schedules. Both groups received 20 extinction trials. The apparatus was a gray Masonite panel, 30 x 30 in., with a large lever in the center that could be depressed 15 in. To the left of the lever were seven buttons arranged in a semicircle, with the button on the left labeled "unpleasant," the one on the right labeled "pleasant," and the middle button labeled "neutral." In the middle of the semicircle was a light that came on when a button was pressed and remained on the 4 sec. To the right of the lever was a slit through which cards could be slipped.

When the S entered the experimental room, he was told that this experiment concerned peoples' responses to certain social information. He was told that information might not always be available to him, but that when it was, he was to signal the E that he wanted that information by pulling the lever. The lever pulling was made to seem only incidental to the real purpose of the experiment. If information was available, it was received on a card through the slit in the apparatus. Whether the S received a card or not, he was to indicate how he felt by pushing one of the seven buttons to the left of the lever. When the light that was illuminated by pressing the

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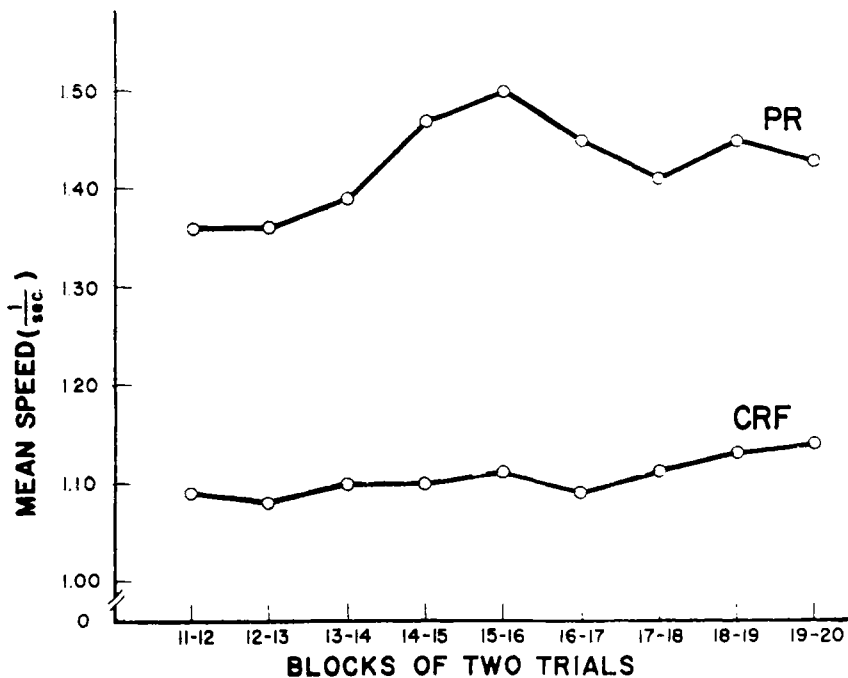


Fig. 1. Asymptotic acquisition speeds for partially reinforced (PR) and continuously reinforced (CRF) groups.

button went out, a new trial began. The S was informed that he could stop pulling the lever at any time he wished.

Reinforcements were homogeneous similar attitudes, i.e., statements about a single attitudinal topic that were typed on cards. Six attitudes previously rated by separate Ss as being important topics (Byrne, 1971) were used. Any one S received only statements involving one attitudinal issue upon which he had previously chosen an extreme alternative. On nonreinforced trials, the Ss received nothing.

The lever was wired to two clocks. The first clock was activated as soon as the light illuminated by pressing the "feelings button" went out and was terminated when the S began to depress the lever. The second clock was then activated and was terminated when the lever reached the bottom of the channel through which it passed.

#### RESULTS AND DISCUSSION

Two Ss in the CRF group quit during acquisition, and their data were discarded. When an S did not pull the lever within a 30-sec period after the start of a trial in extinction, the experiment was halted and the S was given a score of 30 sec on Clock 1 and 15 sec on Clock 2 for the remaining trials of acquisition. This procedure of stopping the S if he did not respond in a given amount of time was found necessary (i.e., in pilot work, if we told an S to respond after starting the

experiment, he would respond for a long time at a steady pace regardless of the reinforcement contingencies). Litchfield & Duerfeldt (1969) reported similar results. In view of this procedure, it seemed that several measures of extinction other than speed should be considered. The first of these was the number of Ss stopping during extinction. Three of 13 Ss in the PR group and 10 of 13 Ss in the CRF group quit during extinction. This significant difference ( $\chi^2 = 5.54$ ,  $df = 1$ ,  $p < .02$ ) indicated that we were observing a partial reinforcement extinction effect (PREE), i.e., the PR group was more resistant to extinction than the CRF group. Another measure of extinction was mean number of trials in extinction. The PR group continued in extinction for 18.38 trials ( $SD = 3.59$ ), while the CRF group stopped after 10.77 trials ( $SD = 6.82$ ). Again, this difference was significant ( $t = 3.56$ ,  $df = 24$ ,  $p < .01$ ). The more traditional speed measure adjusted for acquisition differences (Anderson, 1963) also indicated that Group PR was more resistant to extinction than Group CRF.<sup>1</sup> Analysis of variance indicated a significant trials effect ( $F = 7.48$ ,  $df = 19/456$ ,  $p < .01$ ), a significant groups effect ( $F = 13.68$ ,  $df = 1/24$ ,  $p < .01$ ), and a significant Groups by Trials interaction ( $F = 2.41$ ,  $df = 19/456$ ,  $p < .01$ ). It is apparent that extinction took place and that the PR group was more resistant to

extinction than the CRF group. The extinction results lend strong support to the position that the present situation is an analog to instrumental conditioning and that our acquisition results may be viewed as an indication of the nature of the reinforcing properties of similar attitudes. The acquisition data are presented in Fig. 1. Visual inspection of Fig. 1 indicates that the PR group was clearly superior to the CRF group. Statistical analysis of the last six trials of acquisition indicates that this is a reliable difference between groups ( $F = 4.85$ ,  $df = 1/24$ ,  $p < .05$ ). The clear superiority of the PR groups indicates that the present situation is an analog to reward rather than to defense conditioning. In turn, we may, with some confidence, assert that similar attitudes are positive, not negative, reinforcers. When the results reported by Lamberth, Gouaux, & Padd (in press), who used a more powerful positive stimulus, are considered, an even stronger case is made for the positive reinforcing effects of similar attitudes.

Two other questions have been cleared up by the present results. It is apparent that the analog to defense conditioning reported by Weiss and his associates is specific to a situation in which noxious disagreement is introduced prior to agreement. In this specific situation, similar attitudes function as negative reinforcers. In the present situation, where disagreement is not introduced prior to the agreement, similar attitudes function as positive reinforcers. Finally, it may be that the reason Lamberth, Gouaux, & Padd (in press) did not show an increase in positive affect following the presentation of similar attitudes was due to the lack of sensitivity of the semantic differential.

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#### NOTE

1. As in other research employing a similar apparatus (see Lamberth, 1971), Clock 2 times were more stable and are the only ones reported.