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NOTE
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Negative incentive contrast effects with verbal reinforcement[1]

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A decrease in amount of reinforcement resulted in negative incentive contrast effects. This finding agrees with many studies involving animal Ss.

Negative incentive contrast effects are obtained when the performance of Ss exposed to a decrease in amount of reinforcement drops significantly below the performance of control Ss exposed to only the single lower reward magnitude. Investigations involving animal Ss have found that a decrease in incentive magnitude typically results in negative contrast effects. Crespi (1942) demonstrated that Ss exposed to a decrease in amount of reinforcement exhibited sudden decreases in performance that exceeded the levels of performance expected from the postshift magnitude of reinforcement. Negative incentive contrast effects have been observed in rats when using solid food (DiLollo & Beez, 1966), and sucrose and saccharine (Weinstein, 1969). Little information is available concerning how human Ss respond to a decrease in amount of reinforcement. The present study attempted to determine how human Ss respond to a reduction in incentive magnitude.

SUBJECTS

The Ss were 15 male and 9 female undergraduate students enrolled in an introductory psychology course at the University of Maine, Portland. The Ss were assigned randomly to each of four equal groups.

MATERIALS

The materials consisted of a Kodak Carousel 750 slide projector, 5½ ft from a 5½-in. square piece of grey metal that served as a screen, 2 x 1½ in. slides with digits typed on them (i.e., 776 X 7), and a stopwatch.

PROCEDURE

Each S worked a set of 15 mental multiplication problems. One answer or 30 sec (whichever came first) was allowed for each problem, and there were 8 sec between problems.

The problems were worked in four situations. Ss received no reinforcement after their answers (N). Other Ss received a low (L) reward, one point, or a high (H) reward, three points, after answering the 1st, 2nd, 4th, 6th, 9th, 10th, 11th, 12th, and 14th problems. And, finally, some individuals experienced a shift in reinforcement magnitude from high to low (S) after the 11th problem.

The Ss who received L, H, or S were read the following instructions: "This is an experiment in abstract problem solving, the ability to rapidly work problems involving abstract reasoning. You will be given some problems to work. Each one consists of a three-digit number multiplied by a one-digit number. You are to mentally (without pencil and paper) multiply the numbers as quickly as you can and then tell me your answer. You will receive 0, 1, 2, or 3 points after each answer. The closer you are to being correct, the more points you will receive. You will be told perioddcally how you are doing."

In the instructions to the N Ss, reference to receiving points was omitted.

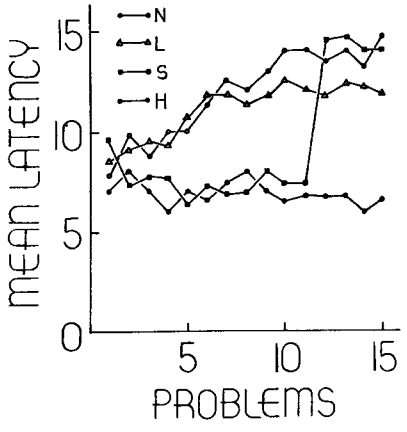

Fig. 1. Mean latency, in seconds, per problem.

RESULTS

Latency means (the time between slide onset and the first response) were examined in the analysis of the results.

From Fig. 1, it appears that for Problems 1-11, the Ss in the H condition took less time to answer than did the Ss in the L or N situations. It also seems that the Ss in the N condition took longer to answer than did the Ss in the L condition. The mean latency per problem from Problems 1-11 differed significantly among the four groups by analysis of variance [$F(3,20) = 3.70$, $p < .05$].

By Duncan's comparisons, the difference between H and L, H and N, L and N was each statistically significant ($p < .05$), while the difference between H and S was not statistically reliable ($p > .05$).

Figure 1 indicates that on Problem 12, S Ss abruptly increased their mean latency to a level below that of the L Ss (negative contrast effects). The mean latency per problem from Problems 12-15 differed significantly between the S and L Ss by an analysis of variance [$F(1,10) = 5.23$, $p < .05$].

DISCUSSION

The findings that for Problems 1-11 the N Ss took significantly more time to answer than any other Ss and that the H Ss took significantly less time to answer than the L Ss indicate that: (1) saying "3" or "1" after an answer served as a reinforcing event, and (2) two discriminably different levels of reinforcement were used.

The experiment demonstrated negative incentive contrast effects with a decrease in the amount of reinforcement.

This result agrees with many studies involving animal Ss (e.g., DiLollo & Beez, 1966, Weinstein, 1969). It would appear that human Ss respond to a decrease in incentive magnitude as do many animal Ss.

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NOTES

1. We thank Deborah Watkins for her help in planning the experiment.

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