

Effects of Extrinsic Rewards on Children's Subsequent Intrinsic Interest

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GREENE, DAVID, and LEPPER, MARK R. *Effects of Extrinsic Rewards on Children's Subsequent Intrinsic Interest*. CHILD DEVELOPMENT, 1974, 45, 1141-1145. Preschool children were asked, in individual sessions, to engage in an activity of high initial interest, either for its own sake or in order to obtain an extrinsic reward. Subsequently, children who had undertaken the target activity as a means to some ulterior end showed less intrinsic interest in this activity, as measured unobtrusively several weeks later in the children's classrooms, than control subjects who had either received the same reward unexpectedly or had engaged in the activity without expectation or receipt of extrinsic rewards.

Recent years have witnessed a growing concern over the possible side effects of the use of tangible extrinsic rewards and explicit contractual systems in classrooms, among both educators (Brophy 1972; Good 1972) and psychologists involved in the application of behavior modification techniques to classroom settings (O'Leary, Drabman, & Kass 1973; O'Leary, Poulos, & Devine 1972). Yet, despite considerable debate, little experimental data relevant to these concerns have been generated.

One recent study by Lepper, Greene, and Nisbett (1973), however, does provide some evidence concerning one possible adverse effect of the use of extrinsic rewards on children's subsequent intrinsic interest in the activity for which rewards were provided. Theoretically, the study was designed to test the "overjustification" hypothesis suggested by self-perception theory (Bem 1972; Nisbett & Valins 1971), namely, that a person's initial intrinsic interest in an activity may be effectively undermined by inducing that person to engage in the activity as an explicit means to some extrinsic goal. Colloquially, the study asked whether the provision of extrinsic rewards would turn "play" (i.e., an activity which will be engaged

in for its own sake) into "work" (i.e., an activity which will be engaged in only when extrinsic incentives for engaging in the activity are present).

To answer this question, Lepper et al. (1973) randomly assigned preschool children who met a criterion of intrinsic interest in a drawing activity during baseline observations in their classrooms to one of three treatment conditions. In the expected-award condition, subjects agreed to engage in the drawing activity in order to obtain an extrinsic reward (a "good-player award" certificate adorned with a gold seal and red ribbon). In the unexpected-award condition, subjects engaged in the same activity and received the same reward but had no knowledge of the reward until after they had finished the activity. In the no-award condition, subjects neither expected nor received the reward but otherwise duplicated the experience of subjects in the other two conditions. Experimental sessions were conducted individually in a room apart from the subjects' classrooms. One to 2 weeks after these sessions, the drawing activity was introduced into the classrooms again and measures of intrinsic interest were obtained unobtru-

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sively by observation from behind a one-way mirror. As predicted, subsequent intrinsic interest in the target activity in the classroom—where extrinsic rewards were not expected—was significantly lower for expected-award subjects than for subjects in either of the other two conditions. In addition, relative to pre-experimental baseline measures of classroom interest, expected-award subjects showed a significant decrease in interest, while subsequent interest in the other conditions did not change from baseline.

From a self-perception perspective, this overjustification effect was the result of the presentation of an activity of initial interest in a means-end relationship to a salient extrinsic reward, not unlike those employed routinely in classrooms. Because the potential implications of this finding for settings in which extrinsic rewards are employed to control children's behavior are great, however, the present study was designed to replicate the original study and at the same time to assess the generality of the earlier finding across a salient variation in the contingency imposed between the activity and the reward. The present study involved a 2×2 design in which subjects, during experimental sessions, either were led to expect an extrinsic reward for engaging in a drawing activity (expected award) or received this same award unexpectedly (unexpected award), and in which, orthogonally, subjects were told either that these awards were given to everyone who attempted the drawing activity (low performance demand) or that only those children who drew the very best pictures (high performance demand) would win an award. Unobtrusive classroom measures 2 weeks later assessed subsequent intrinsic interest in the activity.

Method

Subjects, materials, and experimental setting.—Subjects were 73 preschool children of predominantly white, middle-class backgrounds, ranging in age from 3-8 to 4-9. The sample included 37 males and 36 females, but since preliminary analyses revealed no interaction of sex with experimental condition on any measure, the data were collapsed across sex for purposes of analysis.

The Bing Nursery School and its associated facilities served as the experimental setting, which allowed a novel experimental activity to be introduced by the teachers into

free-play periods in ongoing nursery school programs without intrusion into the classroom by researchers. This setting also permitted children's interest in the target activity to be observed and recorded unobtrusively from behind a one-way mirror into the classroom.

The experimental materials were identical with those employed by Lepper et al. (1973). The opportunity to draw freely with felt-tipped magic markers served as the experimental activity, and a good-player award, with spaces for the child's name and school engraved on the front next to a large gold star and a red ribbon, served as the extrinsic reward.

Experimental sessions.—For the experimental sessions, each child was brought individually to a research room attached to the nursery school by a first experimenter. The child was seated at a child-sized table containing a set of magic markers and a sheaf of white drawing paper, and the first experimenter indicated to the subject that there was another person at the school who was interested in watching children draw pictures. In the unexpected-award and the no-award groups, the experimenter then asked the child if he would like to draw some pictures for this second experimenter.

In the expected-award conditions, however, the experimenter first showed the subject a sample good-player award and indicated that the second experimenter had brought along a lot (or a few) of these good-player awards. In the low-performance-demand groups, the experimenter emphasized that this second experimenter had "a whole lot of these awards, enough for everybody in the nursery school who wanted to draw pictures" and that "all you have to do to win an award is to draw some pictures with the magic markers." In the high-performance-demand groups, the experimenter emphasized that this second experimenter had "only a couple of these awards for the whole nursery school" and that "only the children who draw the very best pictures will win one, so you will really have to draw very good pictures with the magic markers to win an award." The child was then asked if he would like to try to win an award.

After the subject had assented to the first experimenter's final question, a second experimenter entered the room, whereupon the first experimenter excused himself and left the child with the second experimenter. Each

subject was allowed 6 minutes to draw pictures for the second experimenter, who remained blind to the subject's condition through the first 5 minutes of this period. These drawings were kept and subsequently rated on a five-point overall-quality scale by naive judges blind to the subject's condition. Reliability of these ratings was quite high, $r = .85$. After 6 minutes, each subject was thanked, and those in the no-award control group were returned to their classrooms.

For subjects who were to receive an award, the experimenter produced a blank good-player award and wrote the child's name and school on it. In the low-performance-demand conditions, the experimenter said, "I have a lot of these awards, and I'm giving them to all the children at the school who have helped me out by drawing pictures with the magic markers"; in the high-performance-demand conditions, the experimenter said, "I only have a couple of these awards for the whole nursery school, so I'm only giving them to the children who draw the very best pictures in the whole school with the magic markers." The experimenter then uncovered an "honor roll" bulletin board, containing a standard array of either two (high performance demand) or 10 (low performance demand) other good-player awards, and asked the child to place his award on the honor roll board. The child was again thanked and returned to his classroom.

Classroom observations.—One to 2 weeks later, the primary measure—subsequent intrinsic interest in the activity in the absence of an expectation of extrinsic reward—was taken in the subjects' classrooms. For the first hour of three consecutive class sessions, the experimental activity was set out on a table by the classroom teachers. The children were thus free to choose between the target activity and the wide variety of other activities offered in the classroom. Unobtrusively, from behind a one-way mirror, two observers blind to subjects' conditions recorded, with near-perfect reliability, $r = .99$, the total amount of time spent with the target activity for each of the children in the classroom.

Results and Discussion

The effects of the various conditions on subsequent intrinsic interest in the classroom are shown in table 1. These data, transformed ($Y' = \log_c [Y + 1]$) to produce homogeneous

treatment variances (Winer 1971), were submitted to a 2×2 least-squares analysis of variance, with quite clear results.

First, the Lepper et al. (1973) findings were replicated. Subjects in the expected-award conditions showed significantly less subsequent interest in the activity than subjects in the unexpected-award conditions, $F(1,52) = 5.66$, $p < .025$, or than subjects in the no-award cells, $t = 2.03$, $p < .05$,¹ which, in turn, did not differ from the unexpected-award cells, $t < 1$. Indeed, only 55% of the subjects in the expected-award groups showed any interest at all in the activity during the postexperimental classroom observations, compared with 85% of the unexpected-award and 87% of the no-award subjects; overall $\chi^2 = 8.18$, $p < .02$; χ^2 (expected vs. unexpected and control) = 8.16, $p < .01$. Since it might be thought that the unexpected-award and no-award conditions increased interest while the expected-award condition had no effect, it is worth noting that in the previous study the former groups did not differ from baseline measures of classroom interest while the expected-award cell showed a significant decrease from baseline interest (Lepper et al. 1973).

These effects, however, were constant across the performance-demand manipulations. There was neither a main effect of performance demand nor any interaction of performance demand with the expected-unexpected dimension, both F 's < 1 . While the lack of effect may be the result of these subjects' inability to grasp the implications of the manipulation, it should be noted that interviews with pretest subjects indicated that every child could at least correctly "recall" whether most of the children or only a few of the children in school were likely to win an award.

Moreover, as in the previous study, differ-

TABLE 1

TRANSFORMED MEAN PERCENTAGE OF FREE-CHOICE TIME SUBJECTS SUBSEQUENTLY SPENT WITH THE TARGET ACTIVITY IN THEIR CLASSROOMS, BY TREATMENT CONDITIONS

| AWARD CONDITION | PERFORMANCE DEMAND | | |
|-------------------------|--------------------|------|----------|
| | High | Low | Combined |
| Expected | 1.26 | 1.13 | 1.19 |
| Unexpected | 1.91 | 2.08 | 1.99 |
| None (control) | ... | ... | 1.85 |

¹ All p values reported in this paper are based on two-tailed tests of significance.

ences in children's performance during the experimental sessions paralleled and heralded differences in their subsequent intrinsic interest. The performance-demand manipulation produced no significant effects on children's drawings in the experimental room; accordingly, the data were again collapsed over this dimension for further analyses. Table 2 presents the remaining comparison of interest, between subjects who expected a reward and those who did not. First, the pictures of subjects who expected an award were rated significantly lower in average quality, $t = 2.29$, $p < .03$, than the pictures of subjects who had no knowledge of the reward, as in the Lepper et al. (1973) study and conceptually analogous data reported by Kruglanski, Friedman, and Zeevi (1971). Second, subjects who expected a reward drew somewhat more pictures than subjects who did not, at a nearly acceptable level of significance, $t = 1.95$, $p < .06$, suggesting that the immediate effect of the award was to produce more, but almost necessarily less detailed, pictures. Across conditions, the number and quality of pictures in the experimental sessions were indeed negatively correlated, $r = -.43$, $p < .01$. Number of drawings was also negatively correlated, $r = -.26$, $p < .05$, with subsequent intrinsic interest in the target materials in the classroom, while picture quality was positively correlated, $r = .35$, $p < .01$, with the classroom measure of subsequent interest.

The results of this study, then, provide a near-perfect replication of the earlier study by Lepper et al. (1973). Children who expected and received an award for engaging in the target activity showed significantly less subsequent intrinsic interest in the drawing activity than did children who had engaged in the activity without expectation of an extrinsic

reward; and, although children expecting a reward tended to draw more pictures during the experimental sessions than children not expecting a reward, these pictures were judged significantly lower in overall quality. Moreover, the manipulation of performance demand in this study produced no significant effects on any of these measures, suggesting that the deleterious effects of expected rewards on subsequent intrinsic interest are not limited to a particular manner of presentation of the reward. Instead, the data are consistent with the notion that the mere presentation of the drawing activity as a means to a salient ulterior goal can be sufficient to produce a decrease in later intrinsic interest in that activity.

The fundamental value of a self-perception approach, we believe, lies in the suggestion of a dependent measure not commonly employed in evaluations of the effects of tangible extrinsic rewards—that is, subsequent free-choice behavior in a situation where extrinsic rewards are not anticipated. Theoretically, this approach should contribute considerably to our meager knowledge of the processes by which behavior change induced by extrinsic rewards may generalize across situations (see O'Leary & Drabman 1971). Practically, the present data suggest the importance of examining the potential adverse long-term consequences of extrinsic reward systems with an appropriate dependent measure. Clearly, a self-perception account does not predict that such adverse consequences will necessarily, or even typically, be produced by extrinsic rewards (Lepper et al. 1973); it does, however, suggest the incompleteness of any analysis of reinforcement procedures which relies solely on assessments of the immediate, instrumental effects of rewards on behavior.

TABLE 2

MEAN NUMBER AND QUALITY OF PICTURES DRAWN BY SUBJECTS DURING EXPERIMENTAL SESSIONS

| EXPERIMENTAL CONDITION | PICTURES | |
|--------------------------------------|-------------------|----------------------|
| | Number | Quality ^a |
| Expected award ($N = 30$) | 2.07 ^b | 2.84 ^c |
| Did not expect award ($N = 41$) | 1.61 ^b | 3.37 ^c |

^a Higher numbers indicate higher-quality pictures.

^b $t(69) = 1.95$, $p < .06$.

^c $t(69) = 2.29$, $p < .03$.

References

- Bem, D. J. Self-perception theory. In L. Berkowitz (Ed.), *Advances in experimental social psychology*. Vol. 6. New York: Academic Press, 1972.
- Brophy, J. E. Fostering intrinsic motivation to learn. *Journal of School Psychology*, 1972, 10, 243-251.
- Good, T. L. The use of concrete rewards. *Journal of School Psychology*, 1972, 10, 253-261.
- Kruglanski, A. W.; Friedman, I.; & Zeevi, G. The effects of extrinsic incentive on some qualitative aspects of task performance. *Journal of Personality*, 1971, 39, 606-617.

- Lepper, M. R.; Greene, D.; & Nisbett, R. E. Undermining children's intrinsic interest with extrinsic rewards: a test of the overjustification hypothesis. *Journal of Personality and Social Psychology*, 1973, 28, 129-137.
- Nisbett, R. E., & Valins, S. Perceiving the causes of one's own behavior. Morristown, N.J.: General Learning Press, 1971.
- O'Leary, K. D., & Drabman, R. Token reinforcement programs in the classroom: a review. *Psychological Bulletin*, 1971, 75, 379-398.
- O'Leary, K. D.; Drabman, R.; & Kass, R. E. Maintenance of appropriate behavior in a token program. *Journal of Abnormal Child Psychology*, 1973, 1, 127-138.
- O'Leary, K. D.; Poulos, R. W.; & Devine, V. T. Tangible reinforcers: bonuses or bribes? *Journal of Consulting and Clinical Psychology*, 1972, 38, 1-8.
- Winer, B. J. *Statistical principles in experimental design*. (2d ed.) New York: McGraw-Hill, 1971.

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