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ABSTRACT

Typical learned helplessness research has involved the presentation of non-contingent, aversive events followed by measures of performance on subsequent tasks; recent investigations have focused on the effect of non-contingent rewards. To examine the effects of non-contingent rewards on children, two studies were conducted, in which children were exposed to two series of tasks. For the first task, 24 children, aged 10 to 14, were randomly assigned to 3 reward schedules including contingent reward for correct performance; 100% reward; and random (50%) reward regardless of performance. A fourth group of control subjects were not exposed to the first series of tasks. For the second series of tasks, all children (N=60) received a contingent reward. Response latency and errors on coding tasks served as the dependent measures. In both investigations, significantly greater response latencies were found for children receiving 50% and 100% reward than for those receiving contingent reward or for controls. No statistically reliable differences were found in errors. The findings suggest that current educational practices should be examined to determine whether learned helplessness states are inadvertently produced by instructional or placement procedures in field settings. (JAC)

THE EFFECTS OF NON-CONTINGENT REINFORCEMENT ON CHILDREN*

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Abstract

Learned helplessness is defined by Seligman (1975) as generalized response decrements following exposure to uncontrollable events. Performance decrements following exposure to uncontrollable response outcomes has been reliably observed in animals as well as humans. The typical paradigm for investigating learned helplessness in humans involves presentation of non-contingent aversive events followed by measures of performance on subsequent tasks. Recent investigations have examined the effects of non-contingent rewarding events in producing learned helplessness. The effects of non-contingent rewards on subsequent learning tasks is a particularly important construct in examining human behavior; however, few studies have been conducted to date. The present series of investigations were designed to further examine the effects of non-contingent rewards on children.

Procedures for the two studies included exposing children to two series of tasks. For the first task involving replication of block designs, children (ages 10 to 14 years) were randomly assigned to three reward schedules including contingent reward for correct performance, 100% reward; and random (50%) reward regardless of performance. A fourth group of control subjects were not exposed to the first series of tasks. For the second series of tasks involving completion of coding problems, all children received contingent reward. Response latency and errors on coding tasks served as the dependent measures.

In both the first investigation (N=24) and the second (N=60), signficantly ($p < .01$ and $p < .05$, respectively) greater response latencies were found for children receiving random 50% and 100% reward than those receiving contingent reward and controls. No statistically reliable differences were found in errors.

THE EFFECTS OF NON-CONTINGENT REINFORCEMENT ON CHILDREN

Although the phenomena known as "learned helplessness" was first descriabed during the mid 1960's (Overmeier and Seligman, 1967; Seligman and Maier, 1967; Seligman, Maier, and Geer, 1968) it has only recently drawn the attention of educational researchers. Learned helplessness has been defined as response and/or motivational impairment resulting from exposure to uncontrollability, that is, situations in which outcome events are not continent on one's behavior.

The effects of uncontrollable outcomes on emotional and motivational states have been well documented. Butkowsky and Willows (1980) have found that academic self-concept is impaired when children are exposed to uncontrollable or non-contingent failure. Specifically, children who are exposed to non-contingent failure show lower expectancy of success, more external locus of control (success is not seen as related to effort), and less task persistence when faced with difficulty. Likewise, Diener and Dweck (1980) found that helpless children formed poorer hypothesis, used less effective strategies, and more often underestimated their success rate than did children who had not been exposed to uncontrollable outcomes.

Several cognitive factors appear to increase the likelihood that uncontrollable outcomes will produce behavioral, emotional, or motivational impairment. For example reading ability, intelligence, and locus of control orientation have all been found to influence the degree to which learned helplessness occurs. Butkowsky and Willows (1980) report that children with poor reading ability are more likely to underestimate their ability after being exposed to uncontrollable failure than are children with average or good reading ability. Weisz (1981) has found that retarded children are less likely to use effective problem solving strategies after uncontrollable failure than are non-retarded peers. Diener and Dweck (1980) report that uncontrollable failure produces more response impairment in children with external locus

of control than in those with internal locus of control. Notably, the studies described above indicate that impaired performance, resulting from mental retardation, reading retardation, external locus of control, etc., leads to greater impairment in performance when uncontrollability is introduced. Several learned helplessness theorists have suggested this phenomenon. For example, Diener and Dweck (1980) note that learned helplessness may become a stable characteristic of some children who define themselves in terms of their failures rather than their successes. Likewise, Thomas (1979) and Weisz (1979; 1981) have used the concept of learned helplessness as an analogue to the syndrome of repeated failures followed by lowered self-concept and response decrement experienced by handicapped students. In discussing the failure patterns of some students, Thomas (1979) notes that it is significant that students who are exposed to failure show deficit performance on tasks which they are initially able to accomplish. She states,

> The parallels between this general description of learned helplessness and the observations of special education teachers are striking. Learning disabled children have been portrayed as no longer able to believe they can learn. (p. 211)

In view of the fact that children with deficit cognitive behaviors are likely to show even more impairment when faced with uncontrollable failure, the learned helplessness phenomenon would seem to have extremely important implications for educational settings. Children such as those described by Thomas (1979) and Weisz (1981) would seem destined to experience a progressive failure spiral. The field of special education has attempted to remedy such chronic failure patterns by presenting material geared to the abilities of the individual child and by providing nonaversive school environments for children with learning problems. Professionals in the field of special education typically use positive outcomes to reward approximations of task performance, perceived effort on tasks, as well as accurate task performance. It is theorized that as task performance improves, so will self-concept and a host

of other covert and visible behaviors. With the emphasis on providing positive or rewarding outcomes, teachers who are not aware of how to select appropriate reinforcement schedules may well, in their eagerness to be rewarding, place students in uncontrollable situations.

Paradoxically, the attempts of special educators to alleviate the failure syndrome by providing positive outcomes may have equally detrimental effects on the child's performance if these outcomes are uncontrollable. Recently, Seybert and colleagues (Seybert, Gilliland, and Atwood, Note 1; Seybert, Gilliland, Wilson, McClanahan, and Vandenberg, Note 2; Seybert, Wilson, and Vandenberg, Note 3) have studied the effects of uncontrollable or non-contingent positive outcomes in producing learned helplessness. Likewise, Buys and Winefield (1982) and Griffith (1977) have reported that non-contingent rewards result in performance decrements, but not in affective deterioration as described by Seligman (1975).

In an effort to further explore the effects of non-contingent positive outcomes on human behavior, two studies were undertaken. In the first study tangible rewards were used as positive outcomes. In the second study, to more closely approximate reward conditions which might occur in a natural setting, verbal rewards, praise, alone was used to produce uncontrollability.

Study One

Subjects

Twenty-four children (18 males and 6 females) ranging in age from 10 to 14 yers served as subjects. The sample was drawn from a midwestern urban area and consisted of children from both middle and lower socio-economic backgrounds. Subjects were randomly assigned to one of four equal groups (n=6).

Apparatus

In the non-contingent reward situation, Phase I, the apparatus consisted of a series of twenty block designs drawn on 18cm by 14cm cards. The subjects were to

reproduce the design of each card by arranging blocks. However, only ten designs could be successfully replicated using the blocks that were provided. The plastic blocks were 3cm squares with two sides being all red, two sides being all white, and two sides being half red and white.

In the contingent reward situation, Phase II, a series of ten coding tasks were used. A standard consisting of a double line of ten squares with the upper squares containing randomly arranged capital letters of the alphabet was presented to each subject. Graphically similar letters were not used in any one series, e.g., O-Q. The lower set of squares consisted of randomly arranged numerals ranging from zero to nine. The stimuli to be completed for these tasks consisted of a second double line of ten squares. For each set of squares either a number or letter was missing. The sequence of numbers and letters was rearranged; thus, the subjects had to repeatedly look at the standard in order to fill in the missing squares.

Procedure

Procedures for the study included exposing subjects to the two series of tasks. The first series of tasks involved replicating the block design patterns. The block designs were administered to each child individually according to a standard set of instructions. Children were told that if they played the game right, they would be given chips which could be exchanged for prizes, prominently displayed in the room. Prior to the actual experiment, two demonstrations of how the blocks could be used to match the designs were conducted to insure that the child understood the tasks.

The four groups were randomly assigned to one of three reward schedules including contingent reward for correct performance on each task; 100% reward (reward for each task regardless of performance); and random reward for 50% of the tasks, regardless of performance. The fourth group served as controls and were not exposed to the first series of tasks.

At the end of the first task, each child in the first three groups was told that the game was over. She/he traded the chips for prizes and was then dismissed.

Five minutes later a second experimenter, who was blind to Phase I groupings, asked the child to participate in the second task.

The second series of tasks involved completing the coding problems. Again, the tasks were presented to each child individually, according to a standard set of instructions. Children were told that they would receive a chip each time they successfully completed a coding task. Prior to the actual experiment one demonstration of the coding task was conducted to insure that the child understood the tasks. All children received contingent rewards for correct performance on each coding task; i.e., children were awarded chips only for correct completion of the coding task within 40 seconds. Response latency and errors on each coding task served as dependent measures.

Following completion of the study, the children were debriefed, and the entire experiment was explained. It was emphasized that it was the experimenter, and not the child, who had control over the reward schedule.

Results

Analysis of variance for latency of task completion yielded significant group differences, $F(3,20)=15.63$, $p < .001$. Subsequent Newman-Keuls tests indicated that the two non-contingent groups, random 50% reward ($x=2.99.4$) and 100% reward ($x=311.00$), had significantly ($p < .01$) greater latencies than did the contingent reward group ($x=237.6$) or the control group ($x=239.50$) (those children who were not exposed to the first series of tasks.) The two non-contingent groups did not differ significantly nor did the contingent and control groups. The analysis of errors failed to yield statistical significance, $F(3,20)=2.93$, $p > .05$. It is, however, interesting to note that all subjects in the non-contingent 100% reward group made at least one error; whereas, only one subject in the contingent reward group and one subject in the control group made any errors on the task.

Study Two

Subjects

Sixty adolescents (33 males and 27 females) between 13 and 16 years of age served as subjects. The sample was drawn from midwestern urban and rural areas and consisted primarily of children from white, middle-class backgrounds. Subjects were randomly assigned to one of four equal groups (n=15).

Apparatus

The apparatus used in Study 2 was identical to that used in the first study.

Procedure

Procedures for the second study were identical to those of the first except for the following: 1) rather than receiving tangible rewards, i.e., chips which could be traded for prizes. Subjects received verbal rewards, i.e., phrases such as "You're doing a good job" and 2) the three experimental groups and the control group consisted of 15 subjects each.

Results

Analysis of variance for latency of task completion yielded significant group differences, $F(3,56)=9.26$, $p < .01$. Subsequent Newman-Keuls tests indicated that the two non-contingent groups, random 50% reward and 100% reward, had significantly ($p < .01$) greater latency of task completion than did the contingent reward group or the control group. The two non-contingent groups did not differ significantly nor did the contingent and control groups. As in the first study, the analysis of errors failed to yield statistical significance.

Discussion

The findings of both studies lend additional support to previous reports by Seybert and colleagues (Notes 1, 2, and 3) and others concerning the effects of non-contingent rewards on subsequent performance. Specifically, the present findings indicate that an individual's performance does deteriorate if s/he is exposed to a

series of tasks which are rewarded on a non-contingent basis. Presentation of non-contingent rewards, in fact, appears to elicit behaviors which are similar to the learned helplessness effect described by Seligman (1975).

As previously noted, the effects of learned helplessness would seem to have extremely important implications for educational settings. In light of current educational theories of motivation and techniques of behavior management, the effects of non-contingent rewards on behavior may be of more applied interest to educators than the effects on non-contingent aversive consequences. The present findings demonstrate that non-contingent rewards, whether tangible or social, produce impaired performance. Thus in a classroom, the well meaning teacher who says, "You've done a good job," to a student whose work is less than adequate, may actually elicit further performance impairment.

In considering the findings of the present studies it is important to note that resulting impaired performance was obtained after subjects had been placed in non-contingent reward situations for less than 20 minutes. One can only speculate on the effects of daily random rewards that students may experience as they move from class to class during the typical school day. That is, students may find that reward conditions vary drastically from teacher to teacher as well as between school and home environments.

Other possible implications of these findings are currently being examined. Specifically, the authors are investigating the effects on classmates of observing another student receive non-contingent rewards. As information regarding this phenomenon accumulates, current educational practices should be examined to determine whether learned helplessness states are inadertently produced by instructional or placement procedures in field settings.

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