THE EFFECT OF A CLASS-BASED POINT SYSTEM ON CORRESPONDENCE BETWEEN PLANNED AND ACTUAL STUDY TIME FOR COLLEGE FRESHMEN

An abstract of a Thesis by
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The problem. To assess the effectiveness of a laboratory based point system on the production and maintenance of both yes-no correspondence (number of days students planned to attend and attended a study Enrichment Laboratory) and continuous correspondence (number of 15 minute units students planned to attend and attended a study Enrichment Laboratory).

Procedure. Eighteen freshmen were required to earn 18,000 points to pass Study Enrichment Laboratory. Students indicated the times they planned to attend a monitored study laboratory on a daily planning sheet. The number of days and amount of time students attended the laboratory were recorded four evenings each week for 11 weeks. Points were given free during baseline conditions and were available at other times for yes-no and continuous planned attendance at the Enrichment Laboratory and for yes-no and continuous correspondence between planned attendance and attendance at the Enrichment Laboratory.

Findings. When points were contingent on correspondence, students who planned to attend and attended the study laboratory infrequently during baseline showed increased correspondence between number of days planned and attended (yes-no correspondence) but not between amount of time planned and attended (continuous correspondence). Yes-no correspondence was not maintained when the point contingency was removed. Students who planned to attend and attended the study laboratory frequently during baseline showed increased correspondence between both days planned and attended (yes-no correspondence) and amount of time planned and attended (continuous correspondence). Only yes-no correspondence was maintained when the contingency was removed.

Conclusions. Some students trained in correspondence procedures were able to maintain yes-no correspondence even after the reinforcement contingency was withdrawn. However, yes-no correspondence may not be beneficial to a student if the amount of time studied remains low.
Recommendations. Methods of training continuous correspondence should be investigated further. Eventually it may be possible to provide correspondence training for students which would allow them to later maintain high levels of studying without explicit monitoring and reinforcement.
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Approved by Committee:

Chairperson

Dean of the School of Graduate Studies
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Chapter 1

INTRODUCTION

Recently, several investigators have been concerned with the measurement and modification of study behavior. Seahinney, Bostow, Laws, Blumenfeld, and Hopkins (1971) and Burt (Note 1) monitored the time that college students studied for unit quizzes in a special study room. Johnston, O'Neill, Walters, and Rasheed (Note 2) developed a study report form on which students reported the time they spent reading, writing notes, reviewing the text, and engaging in other study tasks. Bristol and Sloane (1974) used a self report form with contingency contracting to modify study behavior. Nielsen, Lloyd, and Lloyd (Note 3) identified and measured three study behaviors: 1) planning to study, 2) studying, and 3) correspondence between planning and studying, in students' dormitory rooms.

Continual monitoring and reinforcement of study behavior may be impractical in a university setting. Nielsen et al. (Note 3) suggested that if a training procedure could be used to increase correspondence between planning to study and studying, then studying could be indirectly maintained by reinforcing planning alone.

The relationship between saying and doing in preschool children has been studied by several investigators. Lovaas (1961, 1964) and Sherman (1964) found that reinforcing
saying alone had little effect upon doing. However, Risley and Hart (1968) and Hart, Doke, and Risley (Doke, Note 4) were able to maintain an increased number of children's play responses by reinforcing only play statements when they had previously reinforced play statements and then reinforced correspondence between play statements and playing. These two studies were similar in two respects. First, the dependent variable, playing with toys, is assumed to be an enjoyable activity, i.e., a high probability response. When one makes a verbal statement regarding what he has done or plans to do, he is describing behavior which, in the past, has been followed by certain consequences. If that behavior was differentially reinforced, subsequent verbal statements could acquire reinforcing properties (Skinner, 1953, p. 262). The level of correspondence between saying and doing might be expected to increase as the probability of the actual behavior increased. Studying, however, seems often to be a relatively low probability behavior (Bristol & Sloane, 1974; Nielsen et al., Note 3) and therefore may be more resistant to correspondence training procedures. Second, the measure of correspondence between saying and doing was a yes-no measure. Measures of correspondence between planned and actual study behavior may be either yes-no or continuous. For instance, while a student may plan to study and then actually study, he may also plan to study for a specific amount of time but actually study for less, more, or the
same amount of time. A high level of correspondence may be more difficult to achieve and maintain with a continuous correspondence measure than with a yes-no correspondence measure.

The present study examined the effect of reinforcement of planning and of reinforcement of yes-no and continuous correspondence on changes in amount of planned and actual study time.
Chapter 2

METHOD

Subjects

Subjects were eighteen first year university students who voluntarily enrolled in a study course. All subjects had a minimum grade point average of 2.00 (on a scale of 0-4) with at least 10 hours of college credit during their first semester.

Study Course

The Study Enrichment Laboratory was a 2 credit hour, pass/fail course. There were no class meetings, tests, or written assignments. A monitored laboratory was available for studying Monday through Thursday, 6-10 p.m. for 11 weeks. Students could pass the course by earning 18,000 points. Each student was able to earn 25 points per day, Monday through Thursday, by indicating how long he planned to study in the Enrichment Laboratory that evening on that day's section of a weekly planning schedule, and placing the schedule in his dormitory mailbox before 11:00 a.m. A monitor checked each student's study schedule daily and recorded the planned study time for that evening on a master sheet in 15 minute units.
Setting

The Enrichment Laboratory was divided into a study area and lounge area. Six tables, each of which could seat five students, were available in the study area. Lamps and ashtrays were provided for the students' convenience. The lounge area, located in another section of the room, contained a card table, vending machines, and over-stuffed couches and chairs. While a student was present in the Enrichment Laboratory, he was allowed to use either area at any time.

Monitoring

Each student was checked in and out of the Enrichment Laboratory by a monitor using a standard time clock. While a student was present in the study area, the monitor recorded if he was studying on a 15 minute variable time sampling schedule. A student was scored as studying if he was seated at the table, awake, silent, and his study materials were open. Students who failed to meet any part of the criterion were scored as not studying. Individuals causing a disturbance were asked to be quiet or leave the study area. Total study time was computed by subtracting 15 minutes from the total time that a student attended the Enrichment Laboratory every time that the monitor recorded that the student was not studying. Students studied approximately 91% of the time that they were present in the Enrichment Laboratory.
Reliability

One day each week an independent observer separately recorded study behaviors for each student on the same variable time schedule used by the monitor. Percent agreement was obtained by dividing the number of agreements by agreement plus disagreements, times 100. The interobserver agreement was always 94% or greater.

Dependent Variables

Six measures were obtained daily for each student. Three were yes-no response measures: planning to attend the Enrichment Laboratory, attending the Enrichment Laboratory, and the correspondence between planning and attending. Three were continuous response measures: number of 15 minute units of planned attendance, number of 15 minute units of attendance, and the correspondence between the number of 15 minute units planned and the number of 15 minute units attended.

Experimental Conditions

The number of points which a student could earn varied according to the condition in effect. The sequence and duration of conditions for each student depended upon that student's behavior. The order of conditions for each student is summarized in Table 1. Students were notified of changes in conditions by written messages placed in their mailboxes the previous day.
Table 1

Sequence and Duration of Experimental Conditions (A, Baseline; B, Days Planned; C, Days Planned and Attended; D, Units Planned; E, Percent of Units Planned and Attended; F, Units Planned and Attended) for Each Subject.

<table>
<thead>
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Baseline (A) - Students received 300 non-contingent points each day.

Days Planned (B) - A student earned 300 points each day he planned to attend the Enrichment Laboratory regardless of whether or not he attended.

Days Planned and Attended (C) - A student earned 300 points each day he planned to attend the Enrichment Laboratory and then attended.

Units Planned (D) - A student earned 35 points for each 15 minute unit he planned to attend the Enrichment Laboratory regardless of whether or not he attended.

Percent of Units Planned and Attended (E) - This was calculated by dividing the number of 15 minute units attended by the number of 15 minute units planned, times 100. A student earned 300, 200, or 100 points for 100%, 75%, or 50% correspondence respectively. No points were given for less than 50% correspondence. A student who did not plan and then did not attend the Enrichment Laboratory earned no points for that day.

Units Planned and Attended (F) - A student earned 50 points for each 15 minute unit of planned attendance matched by attendance at the Enrichment Laboratory.
Chapter 3

RESULTS

Students who behaved similarly during the initial baseline condition were subsequently placed together in an experimental group. Students in each group experienced identical experimental conditions. If a student's behavior failed to change in the direction of the other students' behavior, he was removed from the group and placed in a different experimental condition.

Students 1-7 both planned to attend and attended the Enrichment Laboratory infrequently during baseline. Students 5, 6, and 7 participated so little during all conditions that they failed the course. Their data are not presented here. Students 1-4 increased both number of days planned and number of study units planned when reinforcement was contingent upon days planned. Attendance, however, remained low. No changes were observed when the baseline condition was reinstated. After Baseline II, reinforcement was contingent upon days planned and attended. Days planned remained high but the number of days that Students 1-4 attended the Enrichment Laboratory increased, i.e. yes-no correspondence increased. However, continuous correspondence decreased since units planned increased more than units attended. In the subsequent baseline condition, attendance declined to zero for all students while days and units planned remained
the same.

The mean number of days per week and the mean number of units per week that Students 8-11 planned to attend and attended the Enrichment Laboratory are shown in Figure 1. The separation of the two lines indicates the degree of correspondence between planning and attending. Students 8-11 planned frequently but attended infrequently during baseline. When reinforcement was contingent upon days planned and attended, mean days planned and attended and yes-no correspondence increased. However, continuous correspondence decreased since mean units planned increased while mean units attended declined. When students were able to earn 15 points for every 15 minutes they planned to attend the Enrichment Laboratory in addition to earning points for days planned and attended, yes-no correspondence remained high but continuous correspondence decreased further. Finally, reinforcement was contingent upon number of units planned. Planned days and planned units remained high, attended days decreased slightly, and attended units declined to baseline levels, i.e. yes-no correspondence was maintained at a higher level than continuous correspondence.

The behavior of Student 12 was similar to the behavior of Students 8-11 in the first three conditions. However, during the days planned and attended plus units planned condition, while days and units planned remained high, days and units attended declined to zero. Subsequently, reinforcement
Fig. 1. Mean number of days and mean number of 15 minute units that students 8-11 planned to attend and attended the study laboratory each week.
was contingent upon matching units planned with units attended. Days and units planned remained unchanged, days and units attended increased, and yes-no and continuous correspondence increased.

Data for Student 15 are presented in Figure 2. The behavior of Student 13 was similar to the behavior of Student 15 in all conditions. During Baseline I, yes-no correspondence was high but number of planned units was low. Subsequently, points could be earned for each 15 minute unit planned. Both planned days and planned units increased. Days and units attended first increased and then declined to baseline levels. When baseline conditions were reinstated, planned days and planned units remained high, but attended days and attended units declined steadily to zero. When points were contingent upon percent of units planned and attended, units attended surpassed units planned, i.e. continuous correspondence was 100%. However, Students 13 and 15 still planned to attend for more days than they actually attended. When baseline conditions were again reinstated, continuous correspondence was maintained, but yes-no correspondence decreased slightly.

The behavior of Student 14 was similar to the behavior of Students 13 and 15 in the first three conditions. However, during the percent of units planned and attended condition, units attended did not surpass units planned. During the final condition, reinforcement was contingent upon the
SUBJECT 15

Fig. 2. Total number of days and total number of 15 minute units that student 15 planned to attend and attended the study laboratory each week.
number of units planned. Planned units increased, actual units decreased, and continuous correspondence declined. Days planned and attended remained at a maximum level and yes-no correspondence remained at 100%.

Data for Student 16 are presented in Figure 3. The behavior of Student 17 was almost identical to the behavior of Student 16 in all conditions. These students both planned and attended the Enrichment Laboratory most days. However, they attended only about 50% of the units that they planned to attend. After baseline, points were contingent upon percent of units planned and attended. Number of planned units decreased steadily and units attended surpassed planned units. When points were contingent upon both percent of units planned and attended plus number of units planned, both units planned and units attended doubled and continuous correspondence was maintained.

Data for Student 18 are presented in Figure 4. This student's behavior was similar to the behavior of Students 16 and 17 in the first two conditions. However, during the percent of units planned and attended plus units planned condition, planned units remained high but attended units declined to zero. Both yes-no and continuous correspondence levels were at 0%. Subsequently, reinforcement was contingent upon matching units planned with units attended. Planned units remained high, attended units increased, and
Fig. 3. Total number of days and total number of 15 minute units that student 16 planned to attend and attended the study laboratory each week.
SUBJECT 18

Fig. 4. Total number of days and total number of 15 minute units that student 18 planned to attend and attended the study laboratory each week.
continuous correspondence increased to about 60%. In this experimental condition, the behavior of Student 18 was very similar to the behavior of Student 12.
Chapter 4

DISCUSSION

The production and maintenance of correspondence may depend at least in part on the initial probability of the behavior measured, the kind of correspondence training procedure used, and the measure of correspondence taken.

Students 1-4 planned to attend and attended the Enrichment Laboratory infrequently during the initial baseline condition. When points were available for days planned, these students planned to attend more days and also more units. Planning did not decline when contingent points were no longer available. However, units attended remained low in all experimental conditions and days attended fell to zero during the final baseline condition. Counselors may be able to increase and maintain planning for students who seldom study but they may find it necessary to provide reinforcers other than verbal encouragement, hope of improved grades, later college credit, or even contingent points in order to increase and maintain studying for these students.

Students 8-11 planned to attend the Enrichment Laboratory frequently but attended infrequently during the initial baseline condition. Both yes-no and continuous correspondence increased when points were available for yes-no correspondence. Subsequently, when points were available for planning only, yes-no correspondence was maintained at a
higher level than continuous correspondence. Counselors might find that yes-no correspondence could be produced and maintained without similar changes in continuous correspondence. At least in the context of studying, continuous correspondence seems to be a more meaningful measure, since it is the amount of study time which is of primary importance. In this experiment, two continuous correspondence procedures were used.

Students 12 and 18 were placed on a matched units planned and attended condition (matched correspondence), during which they planned a large number of units. Although the number of units attended increased, maximum points were never attained. Students 13-17 were placed on a percent of units planned and attended condition (percent correspondence), during which they planned a few number of units. These students came to the Enrichment Laboratory, stayed 100% of the time they planned to attend, earning maximum points, and then remained longer. This suggests that training in percent correspondence procedures may increase the likelihood that the natural environmental contingencies for studying will gain control of the behavior.

Since several of the students completed the study course early, it was not possible to determine whether continuous correspondence could be maintained when reinforcement contingencies were removed following training on percent or matched continuous correspondence conditions. Further research in this area is indicated.


REFERENCE NOTES


