The Effects of Token Reinforcement on School Attendance and Study Behavior in a Special School for Delinquent and Pre-Delinquent Juvenile Males

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THE EFFECTS OF TOKEN REINFORCEMENT ON SCHOOL ATTENDANCE
AND STUDY BEHAVIOR IN A SPECIAL SCHOOL FOR DELINQUENT
AND PRE-DELINQUENT JUVENILE MALES

by

Michael L. Boyle

A Thesis
Submitted to the
Faculty of the Graduate College
in partial fulfillment
of the
Degree of Master of Arts

Western Michigan University
Kalamazoo, Michigan
December, 1970
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For their assistance, encouragement and advice throughout this study, I would like to express my sincere thanks to Mr. Gary Meyers, Mr. Dennis Williams, and Mrs. Pamela West. My expressions of gratitude would be far from complete without recognition of the two people who will someday be held responsible for my interest in psychology, for better or for worse; thank you very much Drs. Leo Walder and Sam Berkowitz.

Michael L. Boyle

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Western Michigan University, M.A., 1970
Psychology, experimental

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The principles of Reinforcement Theory, when applied through token economy, can be effective in modifying the behavior of delinquent and "pre-delinquent" boys in settings where the experimenters have access to twenty-four hour control. Phillips (1968) in a home-style rehabilitation setting for "pre-delinquent" boys made varying numbers of tokens (points) contingent upon specified appropriate behaviors such as; completion of homework, cleanliness and punctuality. The tokens could then be exchanged for various privileges such as; riding bicycles, watching T.V., playing games, snacks and going downtown. The resultant increase in appropriate behaviors demonstrated the efficacy of this procedure. Cohen, Filipczak, Bis, Cohen, Goldiamond and Larkin (1968) arranged similar token contingencies in a juvenile correctional institution in another research project where the frequency of desirable academic and social behaviors increased, while the occurrence of undesirable behaviors decreased.

Other studies based on the principles of Reinforcement Theory, utilizing token systems backed up by rewards, such as classroom privileges, have proven very effective in increasing desirable behavior in a basic education program for school dropouts (Clark, Lachowicz and Wolf, 1968); in an adjustment class (O'Leary and Becker, 1967); in children with learning disabilities (McKenzie, Clark, Wolf, Kothera and Benson, 1968); in treatment of non-reading in a culturally deprived delinquent (Staats and Butterfield, 1965); in an institution for delinquent boys (Tyler and Brown, 1968); in a public school using an elementary student as a behavioral engineer (Surratt, Ulrich and Hawkins, 1969); in increasing aca-
demic performance of an institutionalized delinquent (Tyler, 1967), and in a remedial classroom (Whillock and Bushell, 1968). In most of these studies, the authors indicate that social attention by the teachers was of some importance. Indeed, Kuypers, Becker and O'Leary (1968), have demonstrated that it is possible to make a token system fail by making no systematic use of response-contingent social attention.

Zimmerman and Zimmerman (1962) demonstrated the effect of teacher attention on student behavior in a special classroom. When the social consequences of maladaptive behavior were removed, that behavior decreased in frequency of occurrence. On the other hand, when social consequences were introduced following productive behavior, that behavior increased in frequency. Other studies demonstrating the effectiveness of teacher attention on the behavior of their students include, Becker, Madsen, Arnold and Thomas (1967), in reducing classroom behavior problems; Hall, Lund and Jackson (1968), in modifying student study behavior; Harris, Johnston, Kelly and Wolf (1964), with a nursery school child; Madsen, Becker and Thomas (1968), in analyzing its effect on sitting down behavior; Hart, Allen, Buell, Harris and Wolf (1964), on operant crying; and Thomas, Becker and Armstrong (1968), in analyzing the effect on classroom control. The results of these studies indicate that teacher attention is a very significant factor in controlling behavior.

The purpose of the present study was to investigate the effects of a token economy in modifying the behavior of delinquent and pre-delinquent juvenile males in a special school which they attended only
during regular school hours. The public school personnel were essentially untrained in the application of the principles of Reinforcement Theory. A further purpose was to evaluate the effectiveness of this program with these students as an alternative to placing them in a juvenile home, expelling them from school or dealing with them in a normal classroom.
METHOD

Subjects

The subjects were male junior and senior high school students referred from the city schools or the Juvenile Court because of one or more chronic maladaptive behaviors, such as, hitting teachers or truancy. Most students were poor academic achievers and were from families in the lower socio-economic level. Many had police records. They were transported to and from school in a city school bus. The range of ages was from 12 to 17 years and in grade levels from 7 through 11. Student enrollment fluctuated from a low of 6 to a high of 15 because of the arrival of new students and the return of students who had made an adequate adjustment to the regular school system. A total of 26 students were enrolled for varying periods of time during baseline and experimental periods.

Setting

The school was located outside the city in a rural area and consisted of two classrooms, a lobby and two offices inside with a small basketball court outside. The staff, employed by the public schools and not specifically trained in reinforcement techniques, consisted of one half time principal, one half time counselor, and two full time teachers.
**Data Recording**

**Attendance**

Because the primary complaints of the staff were low student attendance and inappropriate study behavior, two categories of behavior were chosen. The first was labelled "attendance" and was operationally defined as being physically present in the school building from the beginning of the first class until the end of the school day. Students who either arrived late or left early but were physically present for more than fifty per cent of the school day were recorded as attending one half day. Students who were absent because of court hearings or incarceration in the juvenile home were not included as enrollees for that day. This was done because the experimenters were interested in determining the number of students who chose to come to school and the number who chose to stay away. Being physically present in court or in the juvenile home precluded coming to school. The percentage attendance was calculated by dividing the number of students in school each day by the total number of students enrolled.

**Studying**

The second behavioral category was labelled "studying" and was operationally defined as visually attending to the teacher or the appropriate books and materials currently in use. The amount of time spent studying by these students was determined through the use of standard stop watches and an electronic timer console (Surratt, et
al., 1969). The console contained four electronic timers operated by silent on-off switches visible only to the experimenter. The stop watches were also visible only to the experimenter. The "studying" behavior of every student was recorded for two hours each day. When a student was studying, his timer would be turned on, when he ceased to study, his timer would be turned off. A "percentage study time" was calculated by dividing the actual student study time by the total possible study time. Reliability checks were made intermittently by having two experimenters time the same student concurrently. The reliability figure was calculated by having both experimenters determine the "percentage study time". The larger of these two percentages was then divided into the smaller and the resulting number was the reliability of the experimenters' observation of one student's study time for that session. In all cases, reliabilities were above .94. Sessions during which reliability checks were made are marked by an asterisk on the abscissa in Figures 1, 2, 3 and 4.

**Procedure**

It was decided to incorporate a token economy because of its demonstrated effectiveness in somewhat similar environs, (Cohen et al., 1968; Clark et al., 1968; Tyler et al., 1968; and Tyler, 1967). The initial experimental manipulations were: 1) giving five tokens to all students who arrived at school on time; 2) and presenting a number of tokens contingent upon the percentage of time they spent studying while being monitored.
Phase I, First Baseline

Baseline data on student attendance were gathered from the school records. These data were calculated in accordance with the operational definition for attendance, which did not include those students who were absent because of a court hearing or incarceration in the juvenile home.

Baseline conditions began by introducing the electronic timer console and stopwatches into the two classrooms. The experimenter then monitored the study behavior of the students for a block of time approximately sixty minutes in length each day for the following six school days. On the first day, students were very curious about the console and demanded an explanation. The experimenter and teachers then explained that it was just a device for measuring various things going on in the classroom. The students then commented that it might be useful in, "seeing how much time a guy spent looking out the window", demonstrating that they had a fairly accurate idea as to the nature of the data being gathered. However, they volunteered no hypotheses as to the purpose of the experimenters collecting such data and for the rest of the six-day baseline period data were collected without incident.

A modification of the multiple baseline technique (Baer, Wolf and Risley, 1968) was utilized for the experimental phases rather than a strict reversal technique, because it was decided that if study behavior was successfully increased, it would be unfair to the students to then rearrange the environment in such a way as to decrease that behavior totally.
In the multiple baseline technique, baselines are established on two or more behaviors. Then an experimental variable is applied to one of these behaviors at a time, thus providing for within-subject (or within group) replication and avoiding the necessity of reversing any of the behaviors to baseline level. In the present study a combination of simple replication across groups, multiple baseline replication within groups, and reversal was employed. The simple replication consisted of applying the experimental manipulation to two separate groups of subjects, a junior high school group and a senior high school group. The multiple baseline aspect was achieved by measuring the dependent variable (studying behavior) in two different settings with each of the two groups, but manipulating conditions at different times in the two settings. These two settings were actually different times of day — 9:00 to 10:00 and 10:00 to 11:00 A.M. — when the pupils were engaged in different activities. Finally, a reversal design was employed to the extent that for each of the two groups the experimental manipulation was applied and then removed during one of the morning sessions. The overall experimental design is presented in Table 1. It should be observed that besides providing amply for replication, this design also allows assessment of the generalized effect of applying the manipulation during one hour of the day, for with both groups there is measurement of the dependent variable during two hours while the manipulation is being applied during only one of these hours.


TABLE 1

Order of Experimental Manipulations

**Studying Behavior**

<table>
<thead>
<tr>
<th>Junior High</th>
<th>Phase I (First Baseline)</th>
<th>Phase II</th>
<th>Phase III</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 - 10:00</td>
<td>no token contingencies (baseline)</td>
<td>token contingencies</td>
<td>no token contingencies (baseline)</td>
</tr>
<tr>
<td>10:00 - 11:00</td>
<td>------</td>
<td>no token contingencies (baseline)</td>
<td>token contingencies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Senior High</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 - 10:00</td>
</tr>
<tr>
<td>10:00 - 11:00</td>
</tr>
</tbody>
</table>
Phase II

Experimental Phase II began with a general meeting of all students and staff. Students were informed that they would be receiving five tokens for attending school each day, and varying numbers of tokens from their teachers for studying, which could be exchanged for lunches, models, paints and brushes from a school store which had just been established. A complete presentation of the contingencies of the token economy is included in Tables 2 and 3. At the request of the staff, the operational definitions of "attendance" and "studying" were made clear to the students at this meeting. This was done because there was some concern about the possible negative reactions of the students to changes in the normal routine. Each student was then given five tokens, and every morning thereafter received five tokens for arriving at school. All students then returned to their classrooms and monitoring of study behavior began. At the end of the period during which token contingencies were in effect, each student would receive a grade from the experimenter based on his "percentage study time". This grade was then exchanged for the appropriate number of tokens from the teacher (see Table 2).

In determining what back-up reinforcers to use in the token economy, the experimenters followed the suggestions of the staff and also the recommendations of the students (Homme, 1969). This resulted in making available to the students for varying numbers of tokens, a complete lunch, plastic models, paints and brushes, playing time on a new pool table and a well defined procedure for getting back to their regular public school classes. Initially, small aluminum coins were used as
### TABLE 2
Token Contingencies

<table>
<thead>
<tr>
<th>Behavioral Event</th>
<th>Grade</th>
<th>% Studied</th>
<th>Tokens Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attending School</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Studying in the classroom</td>
<td>A+</td>
<td>97-100</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>A</td>
<td>93-96</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>A-</td>
<td>90-92</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>B+</td>
<td>87-89</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>83-86</td>
<td>18</td>
</tr>
<tr>
<td></td>
<td>B-</td>
<td>80-82</td>
<td>15</td>
</tr>
<tr>
<td></td>
<td>C+</td>
<td>77-79</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>C</td>
<td>73-76</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>C-</td>
<td>70-72</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>D+</td>
<td>67-69</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>D</td>
<td>63-66</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>D-</td>
<td>60-62</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>F</td>
<td>0-59</td>
<td>0</td>
</tr>
</tbody>
</table>

**Miscellaneous duties:**
- cleaning up lunch area
- assisting Experimenter with operation of the school store
- assisting Experimenter with operation of the pool table

Various individual contingencies arranged by teachers

1-10
### TABLE 3

**Backup Reinforcers**

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost in Tokens</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandwich</td>
<td>10</td>
</tr>
<tr>
<td>Pop</td>
<td>10</td>
</tr>
<tr>
<td>Cake</td>
<td>10</td>
</tr>
<tr>
<td>Ice Cream</td>
<td>10</td>
</tr>
<tr>
<td>Candy</td>
<td>5</td>
</tr>
<tr>
<td>Gum</td>
<td>5</td>
</tr>
<tr>
<td>Potato Chips</td>
<td>5</td>
</tr>
<tr>
<td>Pretzels</td>
<td>5</td>
</tr>
<tr>
<td>Apple</td>
<td>3</td>
</tr>
<tr>
<td>Two small candies</td>
<td>1</td>
</tr>
<tr>
<td>Model Cars (large)</td>
<td>35</td>
</tr>
<tr>
<td>Model Cars (small)</td>
<td>25</td>
</tr>
<tr>
<td>Spray paint (rental)</td>
<td>6</td>
</tr>
<tr>
<td>Bottle paint</td>
<td>4</td>
</tr>
<tr>
<td>Brush</td>
<td>3</td>
</tr>
<tr>
<td>Pool Table (rental fee)</td>
<td>1/minute</td>
</tr>
<tr>
<td>Letter reporting progress to proper authorities</td>
<td>1000 (accumulated and spent, need not be saved)</td>
</tr>
<tr>
<td>&quot;Special Lunch&quot; on Friday</td>
<td>100% attendance that week</td>
</tr>
</tbody>
</table>
tokens, however, they proved to be cumbersome and the economy was later changed to multidenominational paper play money.

Phase III

Experimental Phase III consisted of revising the times when token contingencies were in effect. In Phase II, the junior high section studied under token contingencies from 9 A.M. to 10 A.M. and no token contingencies from 10 A.M. to 11 A.M. Thus, in Phase III, the token contingencies were in effect from 10 A.M. to 11 A.M. but not from 9 A.M. to 10 A.M. As in Phase II, study behavior was observed and recorded under both conditions for all students.

In Phase II, the senior high section studied under token contingencies from 10 A.M. to 11 A.M. and no token contingencies from 9 A.M. to 10 A.M. The Phase III manipulation consisted of applying token contingencies from 9 A.M. to 10 A.M. but not from 10 A.M. to 11 A.M. As in Phase II, study behavior was observed and recorded under both conditions for all students.

Extra Reading

Both teachers had cited poor reading ability as a major problem in their students' poor academic performance, thus on day 1 of Phase III an SRA Reading for Understanding Laboratory was made available to both the junior and senior sections. The kit consisted of short reading units for increasing comprehension at each of 100 levels of difficulty from fifth grade through freshman college. The students were
informed, initially, that they could work on the Laboratory during breaks or at lunchtime and that it was an excellent method for increasing their reading ability. No tokens were offered for this extracurricular activity. Thus, regarding the behavior of doing extra reading assignments, Phase III contained both a baseline condition when no token contingencies were in effect and an experimental condition. The baseline was two weeks in length.

During the next two weeks, of baseline and Extra Reading, no units were completed. The students were then informed that they would receive five tokens for completing the first unit each day. In addition, they would receive five more for 90% - 100% achievement, or three more for 80% - 90%, or one more for 70% - 80%. If he scored below 70%, a student would attempt to correct his wrong answers. The unit would then be regraded and he would be awarded one less token than he would have received for the same percentage correct on the first attempt (see Table 4). All students would begin at level 1. If their achievement was 80% or better, they would skip to level 3. If their achievement at level 3 was 80% or better, they would skip to level 5. This skipping of levels would continue until their achievement fell below 80%, then they would drop back one level and begin working on each unit in a step by step upward progression. This was done to maximize the probability of success initially, and to allow the student to demonstrate by his own performance where his achievement level was.
### TABLE 4

**SRA Reading Laboratory Contingencies**

<table>
<thead>
<tr>
<th>Behavioral Event</th>
<th>Tokens Earned</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completing units from the SRA Reading for Understanding Laboratory</td>
<td></td>
</tr>
<tr>
<td>For completing first unit each day</td>
<td>5</td>
</tr>
<tr>
<td>For A level achievement</td>
<td>5</td>
</tr>
<tr>
<td>For B level achievement</td>
<td>3</td>
</tr>
<tr>
<td>For C level achievement</td>
<td>1</td>
</tr>
<tr>
<td>For A level achievement on second attempt</td>
<td>4</td>
</tr>
<tr>
<td>For B level achievement on second attempt</td>
<td>2</td>
</tr>
</tbody>
</table>
Before incorporation of the token contingencies for the Reading Laboratory, the maximum number of tokens a student could earn was dependent primarily on his graded study behavior. After the tokens were introduced with the Reading Laboratory, the maximum number of tokens a student could earn each day was contingent upon both his graded study behavior and the number of units he could complete during his free time. This, in effect, lifted the "ceiling" from the token economy and put the students more in control of their total possible daily earnings.

**Attendance**

Throughout Experimental Phase II and Phase III, students received five tokens for coming to school. With the beginning of week 2 of Phase III, an additional contingency was incorporated for attendance. Each week on the last day of school, those students having a perfect attendance record received a special lunch consisting of a commercial hamburger or fish sandwich, french fries, and a coke.
Figure 1

Junior High Percentage Study Time
JUNIOR HIGH PERCENTAGE STUDY TIME

Phase I

Phase II

Phase III

90 -
80 -
70 -
60 -
50 -
40 -
30 -

O—O 9A.M.-10A.M.
• —• 10A.M.-11A.M.
\[9A.M.-10A.M.\]

1 2 3 4 5
10 15 20 25 30 35

DAYS

JUNIOR HIGH PERCENTAGE STUDY TIME

9A.M. -10A.M.
10A.M. -11A.M.
\[10A.M. -11A.M.\]
\[9A.M. -10A.M.\]
RESULTS

Studying

During baseline, the mean percentage study time for the junior high section from 9 A.M. to 10 A.M. During baseline was 80.3% (see Figure 1). Under token contingencies, during Phase II, the mean increased to 92.7%, or 12.4% over baseline conditions. In session 10, the study behavior of the three junior high students in attendance was being timed. One student told the teacher that he did not intend to study that period and proceeded to read a magazine. His resulting 0.0% study time brought the class average down to 62.5%, even though his classmates had achieved a 93.5% average.

In Phase III, when token contingencies were removed from the junior high section from 9 A.M. to 10 A.M., their mean study time decreased 20.8% from their Phase II performance of 92.7% to 71.9%. This figure is also 8.4% under their baseline performance of 80.3%. In session 31, there is an abrupt decrease in percentage study time. On that day, there was a Civil Rights Commission hearing in the city and most of the students decided to go. Only 3 of the 8 students enrolled in the junior high section attended school.

During Phase II, the study behavior of the junior high section was observed and recorded from 10 A.M. to 11 A.M. under no token contingencies. Their overall mean percentage study time for this period was 84.5%.
Figure 2

Senior High Percentage Study Time
When the token contingencies were applied during the 10 A.M. to 11 A.M. time period to the junior high section in Phase III, their mean study time increased 8.3% to 92.8%.

Overall, the study behavior of the junior high section appears to be fairly consistent under token contingencies throughout Phases II and III. Their mean study time under no token contingencies appears to decrease steadily from the beginning of Phase II to the end of that phase, suggesting the development of a discrimination between the two different morning periods. Their performance under no token contingencies during Phase III is 12.6% under their Phase II performance and 8.4% less than their performance under no token contingencies during Phase I baseline.

The mean percentage study time for the senior high section from 10 A.M. to 11 A.M. during Phase I baseline was 72.8% (see Figure 2). Under token contingencies, during Phase II, the mean increased 19.5% over baseline to 92.3%. When token contingencies were removed in Phase III the mean study time decreased to 85.0%. This figure represents an increase of 12.2% over no token contingency conditions during baseline.

In session 15, there is an abrupt decrease in both the 10:00 A.M. and the 9:00 A.M. study times. This decrease is, in part, due to the fact that one of the four students in attendance barely participated on that day. He came to school only once every thirty days to keep his name on the attendance rolls for legal purposes, and was not interested in participating in classroom activities.

The study behavior of the senior high section during Phase II was observed and recorded under no token contingencies from 9 A.M. to 10 A.M. Their mean percentage study time under these conditions was 85.5%.
Figure 3

Junior High Median Study Time
JUNIOR HIGH MEDIAN STUDY TIME

Phase I

Phase II

Phase III

DAYS

JUNIOR HIGH MEDIAN STUDY TIME

9A.M. - 10A.M.
10A.M. - 11A.M.

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Figure 4

Senior High Median Study Time
When the token contingencies were applied in Phase III during the 9:00 A.M. hour, the mean study time increased 9.3%, from 85.5% to 94.8%. This figure is similar to their performance under token contingencies in Phase II of 92.3%.

All study time data were recalculated and plotted as median study times and are included as Figure 3 for the Junior High section and Figure 4 for the Senior High section. Plotting data from small groups as medians is one way of checking for disproportionate effects of extremely high or extremely low individual scores on the group score. A comparison of the "percentage study times" (Figures 1 and 2) and the "median study time" indicates similar trends in the data patterns through all three phases. The median data are generally higher than the percentage data indicating that the latter were affected by a smaller number of extremely low scores.

Attendance

Attendance data are presented for the separate junior and senior high sections in Figure 5. It appears that the junior high responded more favorably overall to the token contingencies than the senior high. The mean attendance for the senior section during baseline is 62.0% and for the junior section is 69.0%, representing a difference of 7.0%. After the incorporation of the token contingencies, the senior mean attendance increased initially, then began a downward trend resulting in an overall decrease under baseline of 3.4%. The mean attendance for the junior high section increased, following the incorporation of the
token contingencies, and then began a gradual downward trend resulting in an overall increase of 18.3% over their baseline of 69.0%.

After the incorporation of the additional Phase III special lunch contingency for 100% weekly attendance, the senior section weekly attendance increased from 55.1% to 93.2%, in one week. This initial increase was followed by a gradual decline, resulting in an overall increase of 26.8% over the previous experimental condition. This figure also represents an increase of 23.4% over Phase I baseline.

The mean weekly attendance for the junior high section initially increased, following the incorporation of the additional Phase III special lunch contingency for 100% attendance, from 62.0% to 80.0% in one week. This figure then increased for one more week to 89.3%, then gradually declined to a low of 67.2%, resulting in an overall decrease of 5.7% under the mean of the previous experimental condition. The resultant mean attendance figure of 81.6% for the junior high section represents an increase of 12.6% over Phase I baseline conditions.

Overall, the mean attendance of both groups appears to follow a general downward trend during baseline and from the beginning of each Phase to the end. The senior section appeared to respond best under the "Special Lunch Contingency" with the initial increase in mean attendance and the somewhat more stable attendance for the following four weeks.
Figure 5

Junior and Senior Attendance Percentage
JUNIOR AND SENIOR ATTENDANCE PERCENTAGE

Phase I

Phase II

Phase III

WEEKS

JUNIOR HIGH

SENIOR HIGH

X JUNIOR HIGH

X SENIOR HIGH

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Figure 6

SRA Reading Laboratory Cumulative Units Completed
Extra Reading

The data on the number of units completed in the SRA Reading for Understanding Laboratory are presented cumulatively in Figure 6. They indicate that for the first two weeks when no token contingencies were in effect, zero units were completed. However, when the token contingencies were introduced a total of 684 units were completed in the remaining five weeks by 14 students at 70% or better achievement level.
The results indicate that token reinforcement contingencies can be arranged to increase several relevant behaviors of pre-delinquent and delinquent juvenile males in a special school setting staffed by public school personnel.

An analysis of the student study time data indicates that study behavior was partially under the control of the token contingencies. During Phase II and Phase III, under no token contingencies, an increase over baseline in student study time was noted. This increase may have been due, in part, to a generalization effect in which the students' increase in study behavior, under certain contingencies, transfers to other similar environments, even though one or more of the contingencies are different in those environments. Both teachers reported that after the incorporation of the token economy, student study behavior improved throughout the school day.

Daily fluctuations in study time throughout baseline and experimental conditions may have been due, in part, to the fact that at any given time, class content material varied widely from day to day. A basic sequence of content presentation was adhered to; however, the length of each unit in the sequence remained flexible.

Another contributing factor in the overall improvement of study behavior might have been a change in the amount and type of teacher attention. In the initial public school proposal for this special school, it was stated that: "it cannot be emphasized too strongly that this special school is not a place where problem students want to at-
tend, but one in which they are placed for not conforming to established school behavioral standards. They should sense the feeling of being punished and have the desire to improve their behavior so that they can return to the regular school program." On several occasions, the teachers would ask for ideas from the experimenters on how to deal with student behavior problems. The experimenters stressed the contingent use of positive social reinforcement and tokens instead of punishment as suggested in the public school proposal. The quality and quantity of teacher attention may thus have changed during the course of the experimental conditions.

Another contributing factor to variability in both attendance and study time data might be the frequent fluctuations in the total number of students enrolled. As stated earlier, a total of twenty-six students were enrolled for varying periods of time during baseline and experimental periods. Enrollment fluctuated from a low of 6 to a high of 15 because of the arrival of new students and the return of students who had made an adequate adjustment to the school system. A certain amount of fluctuation might be expected with such a low total number of students when one left or when one arrived and was adjusting to the new contingencies. Given this flexibility, it is interesting that the data are as consistent as they are. This very consistency might be viewed as supportive data for the effectiveness of the token contingencies.
The attendance data indicate that the junior high section responded more dramatically to the token contingencies. Two facts should be mentioned here because of their possible effect on these data. First, the senior high section generally had fewer students than the junior high section, therefore the absence of one student had a greater effect on the calculated percentage of attendance for the senior group. Second, three students had no intention of coming to school more than once every thirty days, which was the public school attendance requirement for keeping their names on the role books. According to the teachers, this was done because the students' lawyers, at their scheduled hearings or trials, wished to tell the judge that their clients were enrolled in school, which evidently is a significant factor in the severity of sentences issued by magistrates.

Although the teachers and administrators were impressed with the favorable changes in the behavior of the students, they were not supportive of many recommendations submitted by the experimenters. Some of these recommendations might be worthy of mention here for benefit of future investigators in similar environs. The administration vetoed the suggestion to open the school store in the morning when the students arrived, and during their morning break. They were also opposed to making sports equipment contingent upon certain numbers of tokens, since that was not done in "normal" city schools. The suggestion to make field trips to various industries and points of interest contingent upon good behavior and a certain number of tokens also met with solid resistance.
One of the initial contingencies agreed to by the administration but never adhered to, was the letter of progress to be sent to the proper authorities when the student had earned 1000 tokens. Due to this lack of cooperation, students who earned 1000 tokens were instead awarded a check for $10.00 which was to be spent for clothing or goods on a trip to town with the experimenter. On one occasion, when administrators decided to offer a particular student the option of returning to his former school, he asked if he could remain until he had accumulated his 1000 tokens. On another occasion, a student announced that he was not going to study that day. Then he protested loudly when he did not receive any tokens at the end of the experimental period, because he wanted to buy lunch. He protested to the Principal, who then directed the experimenter to give the student a lunch for nothing. Problems such as these arose frequently and may well have had a deleterious effect on some of the criteria behavior of the students.

There were some problems with the teachers and administrators, but there were also some very favorable side effects. One teacher requested assistance in dealing with the tardiness of his students to class. It was suggested that he take baseline data for one week on the extent of their tardiness. Three minutes was found to be the average tardy time. He then allotted two tokens for each student who was seated within 45 seconds after the bell had rung. Students who were late forfeited their tokens to a class pool, which was then divided up among those who had been on time. This procedure was followed for two weeks, after which time all students were arriving in class during the
allocated 45 seconds. Then the teacher began rewarding punctuality on a variable ratio schedule until the end of the program.

This same teacher also used the tokens for rewarding good sportsmanship in gym class. He reported that unsportsmanlike arguments and fights between, specifically, black and white students were minimized, and relations between the two previously polarized groups improved tremendously.

During Phase III, both teachers requested that the experimental contingencies be extended to include the entire day rather than just the morning. However, due to a lack of personnel and funds, this was not possible.

Also, during Phase III students were given the opportunity of helping the teachers and experimenters operate the school store and pool table, and perform other duties relevant to the operation of the token economy. Eligibility for working was determined by the number of units completed in the Reading Laboratory that week, and the teachers' and experimenters' evaluation of the students' behavior in and out of the classroom. Students seemed to enjoy working with the staff, and expressed a desire to become more involved. They requested a voice in the structuring of the contingency system, and this was granted.

Weekly meetings were held with the students and staff to discuss problems within the system and possible solutions. Students tended to suggest punishment contingencies as solutions to problems. For example, they recommended a fifty token fine for anyone harrassing a pool player, if the player filed a complaint with a staff member or a stu-
dent representative. After negotiations, a somewhat less severe punish-
ment was agreed upon. If the complaint was adjudged valid by a staff
member, the plaintiff and the defendant, then the defendant was fined
five coins and lost pool table privileges for the rest of that day.

Following the introduction of reinforcement contingencies for
working on the SRA Reading for Understanding Laboratory, the students
began working on their own time and continued through the last week of
school. A laboratory unit usually took at least five minutes to complete.
Based on this figure a total of fifty-four hours of free time were spent
at an academic activity during the last five weeks of the school year
by fourteen students.

On the last day of the school year all students were asked to fill
out a questionnaire evaluating the token economy. Their answers indi-
cated that 91% liked the token economy and felt that it had been fair.
In response to a request for suggestions for change, 46% recommended
a decrease in prices for food and other commodities, and 54% recom-
mended the presence of female students.

The teachers were also asked to submit their evaluations of the
program and one stated: "The operant conditioning program worked
well with my students, improving study habits, attendance, attitudes
toward staff and school, and positive leadership. I feel that it is
of the utmost necessity that this program remain to help with the
further improvement of academic and behavioral problems."

The other teacher stated that: "The behavior in the area of
attendance and classwork during observation periods was much improved.
The attitudes of the students toward the school improved as did much of their work."

It appears that the staff and students liked the program, and the results indicate that the goals of increasing student attendance and study behavior were achieved with very limited control given to the experimenters.
REFERENCES


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