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THE USE OF A TOKEN ECONOMY SYSTEM
" IN THE TREATMENT OF SCHOOL DELINQUENTS

A THESIS
PRESENTED TO
THE FACULTY OF THE GRADUATE SCHOOL
APPALACHIAN STATE UNIVERSITY

IN PARTIAL FULFILLMENT
OF REQUIREMENTS FOR THE DEGREE
MASTER OF ARTS

BY
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MAY, 1976

THE USE OF A TOKEN ECONOMY SYSTEM
IN THE TREATMENT OF SCHOOL DELINQUENTS

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ACKNOWLEDGEMENTS

I would like to extend my sincere appreciation to the members of my committee: Dr. Paul Fox, Dr. Richard Levin, and Dr. Susan Moss, for their continued patience and assistance in the preparation of this manuscript. I would also like to thank Dr. Walter Bond, a faculty member at the University of North Florida, for his assistance in the analysis and interpretation of the data presented herein. In addition, my special thanks go to Ms. Penny Price and my parents for their continued encouragement and moral support during the final writing of this paper.

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ABSTRACT

Eighty-seven school delinquents in a traditional junior high school were used in a six-month study involving the application of a "token economy." The students were selected from the general population on the basis of poor grades, high rates of absences, disciplinary referrals and suspensions. The study was divided into four treatment phases which were: 1) baseline; 2) traditional counseling; 3) non-contingent token reinforcement; and 4) contingent token reinforcement. The results showed an improvement in grade point averages and attendance for the experimental group during the token economy phases. The experimental group also maintained a lower average response in the suspension and referral categories during the contingent token reinforcement period. Other general treatment effects noted were increased responsibility, initiative, and social interaction.

CHAPTER I

INTRODUCTION

Although praise and other social stimuli have been found to be effective maintainers of appropriate classroom behaviors, (Becker, Madsen, Arnold and Thomas, 1967; Brown and Elliot, 1965; Scott, Burton and Yarrow, 1967; Zimmerman and Zimmerman, 1962) the same reinforcers have proven relatively powerless in the modification of delinquent misbehavior. In situations where social reinforcement has proven ineffective, a more tangible reward has been found to be most successful. Tangible rewards have been used effectively in mental hospitals (Ayllon and Azrin, 1968; Krasner and Atthowe, 1971), institutions for the retarded (Hamilton, 1971), programs for behaviorally disturbed adolescents (Phillips, 1969) and emotionally disturbed children (Cohen and Filipczak, 1971; Wolf, Giles and Hall, 1968). In each case, tokens such as chips, stars, or points were established as conditioned reinforcers by being contingently paired with privileges, recreational activities, dinners, and other back-up reinforcers.

One of the major difficulties in treating delinquents in institutional settings is that much of their deviant behavior (acting out in class, truancy) is maintained by social reinforcement from peers (Buehler, Patterson, and Furniss, 1966). The main advantage of token economies is that they can be used to return the reinforcement control back to the appropriate change agent, the teacher. The return of such control is made possible by the implementation of a complex motivating

system that uses conditioned reinforcers (tokens) to bridge the gap between the behavioral response and the delivery of reinforcement.

Because delinquents are typically behind in school, academic performance has been an important target for token programs. In one case study Tyler (1967) described a program to modify the school performance of a group of institutionalized delinquents. Tokens, which were contingent on acceptable weekly evaluations of performance, could be used to purchase non-institutional clothes, use of a comfortable bed and items from the canteen. Grade point averages increased during the three week period in which contingent token reinforcement was employed.

Another program using two groups of adolescent delinquents was reported by Tyler and Brown (1968) in which quizzes were given daily based on the televised news of the preceding day. Members of one group received tokens contingent upon their quiz scores in contrast to members of the other group who received tokens independent of their performance. After four weeks the experimental conditions were reversed. The results suggest that quiz performance was greater during the contingent reinforcement periods for both groups.

In another study, Cohen (1968) worked with delinquents for three hours daily where the subject had the opportunity to work on educational materials that were individually programmed. The students were neither coerced to study nor to remain in class. However, points (exchangeable for consumable items, privileges and money) were given for the correct completion of assignments, test performance and studying. Points were distributed once a week for an entire week's work. Measures of time spent studying indicated that the behavior was

controlled by reinforcement and that students studied more frequently as "payday" approached. After eight months, students who previously had little interest in academics and had dropped out of school had gained more than two grade levels on standard achievement tests.

Other studies using token systems have indicated similar success in the treatment of adolescent delinquents for anti-social (Buchard and Tyler, 1965) self-care, and cooperative behaviors (Phillips, 1968). A particularly interesting study dealing with the application of behavioral principles to the remediation of truancy was reported by Brooks (1975). In this study the students were exposed to a modified token economy, a contract, and group guidance meetings in an effort to reduce truant behaviors. The combination of these contingency management procedures produced a significant reduction in truancy after only eight weeks of intervention.

Although previous studies have proven the effectiveness of token systems in total institutions and single classrooms, little research to date has attempted to remediate delinquent behavior in a traditional junior high school setting. The reason appears related to the transiency of the individual student which severely limits the power of any one potential change agent. Students move from room to room and teacher to teacher throughout the day, thereby creating enormous difficulties for continuous contact. To be most effective, a program would have to include many or all teachers who could monitor a student's performance on a more consistent basis.

This brings to light a very interesting dilemma. How much of the institutional staff's time must be required in order to carry out an

effective program? The majority of studies involving school-based token economies, social reinforcement and other modification programs rely heavily on the motivation and capabilities of the teacher. In most cases the staff of the institution itself has extraordinary demands placed on them for extended periods of time. Abiden (1971) estimates that 150 hours of time are required to set up a token economy in a normal classroom. The most reasonable solution to these problems is to engineer a system in which the responsibility for implementation and maintenance rests with a behavioral manager within the school.

One study which has addressed itself successfully to the particular problems of staff involvement and training was carried out by Vannote (1974). In this report the school counselor assumed responsibility for and control of a token system involving classroom misconduct. The central aspect of the program was a checksheet which was used to eliminate the requirements of extensive teacher training and participation. Twenty-seven students who participated in the study were chosen from a public junior high school that followed a standard schedule routine of student rotation among rooms and teachers. The checksheet successfully provided timely reinforcement for the student while at the same time reducing the involvement of the teacher. Teacher training for the system was limited to the circulation of a short memo explaining the purpose and procedures to be used in student evaluations. The teacher was asked at the end of each period by the student for written feedback as to his class performance. The comment and signature served as a reward to the child while at the same time

provided a periodic source of communication among the teachers concerning the student's progress during the day. Tallies were made at the end of each week and figured as to the nature of the remarks. One point was also given for each day present and for each day without tardiness. Students received rewards for weekly and monthly point totals. Faculty and administrative reports indicated that three-fourths of the participating students demonstrated a noticeable change in behavior during the project.

The fundamental objective of the present study is to develop an efficient method that will effectively change delinquent patterns of misbehavior in a traditional school setting.

CHAPTER II

METHOD

Subjects. One hundred junior high school students who were participants of a special project during the 1975-76 school year were selected as subjects. The project was specifically designed to work with the potential school dropout having difficulty adjusting to the regular school program. The selection of students was carried out by special referrals from deans, counselors, and teachers and data from permanent school records and folders. The students were selected on the basis of their 1974-75 performance in two or more of the following categories: 1) chronic truancy (absent 25+ days); 2) low grade point average (0.0-1.9 on a 4.0 scale); 3) high disciplinary referral rate (5+); and 4) high disciplinary suspension rate (2+). The average performance for the subjects selected was: 1) absent - 37 days; 2) grade point average - 1.21; 3) disciplinary referrals - 1.67; and 4) disciplinary suspensions - 0.97. The one hundred subjects chosen were then randomly divided into an experimental (N=50) and a no-contact control group (N=50). Experimental subjects were exposed to all treatment conditions while control subjects received no treatment or contact of any kind. No-contact control subjects were used solely for comparative purposes and remained part of the general school program throughout the study. The subjects were matched in a 60/40 ratio as to race (57 percent black, 43 percent white) and sex (61 percent female, 39 percent male). In most instances, the subjects belonged to families with five or more

children, were of lower socio-economic status, and resided in inner city dwellings. School personnel generally described these students as being "chronic troublemakers," "hopeless," and "incorrigible."

Procedure. This study concentrated on the remediation of truant, disruptive behaviors and the improvement of academic performance. The discussion of the program includes the specified target behaviors, student and teacher orientation, the monitoring device, and methodological considerations.

The four previously mentioned criteria which qualified the student as delinquent were those used by the project in the initial selection.

Student orientation to the token economy was carried out in small group sessions (five to eight students) by counselors one week prior to actual implementation. Token menus, reinforcers, payday procedures, and appropriate behaviors were discussed with the students. Sample checksheets, token menus, and balance sheets were also distributed at this time. In an attempt to increase the motivation and involvement in the system, the students were questioned as to desirable back-up reinforcers. O'Leary (1971) reported that simply asking a child what he will work for is the best way to distinguish the most effective reinforcer. Every attempt was made to poll the students on a continual basis so that the back-up reinforcers would be extensive enough to guarantee that every student would be willing to work for something. Orientation was carried out individually with school faculty and staff. The orientation included an explanation of the program's goals, the use

of the checksheet and token menu, and the importance of teacher cooperation. Packets containing sample sheets were distributed during each orientation. After the initial session any difficulties which arose were handled by personal visits or interschool memos. It was possible to limit the time required (10-15 minutes) for each orientation by keeping the content practically oriented and directly relevant to the immediate system.

Monitoring of the individual progress of each student was carried out by means of a modified version (Appendix A) of the checksheet used by Vannote (1974) in his study of classroom misconduct. The student presented the checksheet at the end of each class period and requested feedback (in the form of points) from the teacher on his performance in that class. The more appropriately the student behaved (on time, has materials, participates, percentage on task) the more points he was able to earn. An objective listing of criteria for evaluating the student's performance was provided for the teacher on each checksheet. Additional points could also be earned for each day of full attendance (as indicated by a column of signatures), no referrals or suspensions on a daily basis, participating in individual and group sessions, test and homework papers showing grade improvement in classes, and report card grade improvement. The student was also allowed to take the checksheet home and return it with a parent signature. This provided the student with the opportunity to earn additional points while the parents were being exposed to feedback as to their child's weekly class performance.

Checksheets were collected and distributed every Friday during small group sessions of from three to four students. At this time points were totaled and social reinforcement was provided by the counselor in addition to the selected back-up reinforcer. Points could either be saved or exchanged on a weekly basis for token items such as movie tickets, gift certificates, candy and food coupons. Points could also be saved and used to purchase admission to either monthly field trips or a bonus trip scheduled for the end of the year. This was explained in detail to both students and teachers by means of a token menu (Appendix B) which was distributed during orientation. Another copy was posted in the counseling office and was on display at all times. The token menu outlined for the student which and at what rate behaviors would be reinforced. Any student losing his sheet could not receive points from the lost sheet, but was immediately given a new sheet and allowed to get as many points as possible during the time remaining. Students were also informed verbally and by posting that suspected forgeries would be checked, and if discovered, would invalidate the entire sheet.

Weekly individual point totals and rewards purchased were posted in the counselor's office so that each student's progress would be subject to peer competition. Students were informed on a weekly basis as to their points earned, spent, items purchased and current balance by means of a balance sheet (Appendix C) which was posted in a central location (Coleman and Boren, 1969). The checksheets of the top five point earners were also on display and were used as models for those having difficulty understanding the system.

The actual study was divided into four treatment phases which lasted a total of six months. Phase I (35 school days) was essentially a baseline phase and provided a measure of the student's behavior before any experimental conditions or treatments were introduced. Phase II (40 school days) involved the introduction of the project into the school which provided such traditional methods of treatment as individual and group counseling and social work. Phase III (10 school days) of the study involved the presentation of the checksheet without contingent token reinforcement (NCTR). During this phase the students were encouraged to earn points and were told the points could not be redeemed for back-up reinforcers. Phase IV (40 school days) was the actual contingent reinforcement phase (CTR) where the token economy system was in full operation. The no-contact control group received no treatment of any kind during any of the four phases.

CHAPTER III

RESULTS

The final data analysis was performed on 87 (experimental - 44, control - 43) of the original 100 subjects. Attrition was primarily caused by the student either transferring out of the attendance area (N=9) or voluntarily withdrawing from the project (N=4).

The results indicated that token reinforcement effectively improved grade point averages for the group receiving treatment. Grades were reported during the approximate midpoint of both the first two (baseline/traditional) and the last two (non-contingent/contingent token reinforcement) treatment phases. Due to the fixed occurrence of the students' reporting periods (each nine weeks) the data could not be broken down into the four previously designated treatment phases. Improvement was measured from the first to second reporting period for each group. A paired t-test revealed highly significant differences in grade point averages for the experimental ($t = 4.22, df = 42, p < .005$), but not for the control group ($t = .674$).

Collection and analysis of the data in each of the other performance categories involved the last 10 day period of each treatment phase. The fourth phase of treatment (CTR) was further divided into the first (IVA) and the last (IVB) 10 day period.

The truancy of the experimental group was significantly reduced during the contingent token reinforcement phase of treatment. Figure 1 (p. 12) illustrates the marked decrease in truant behaviors in Phase IVB.

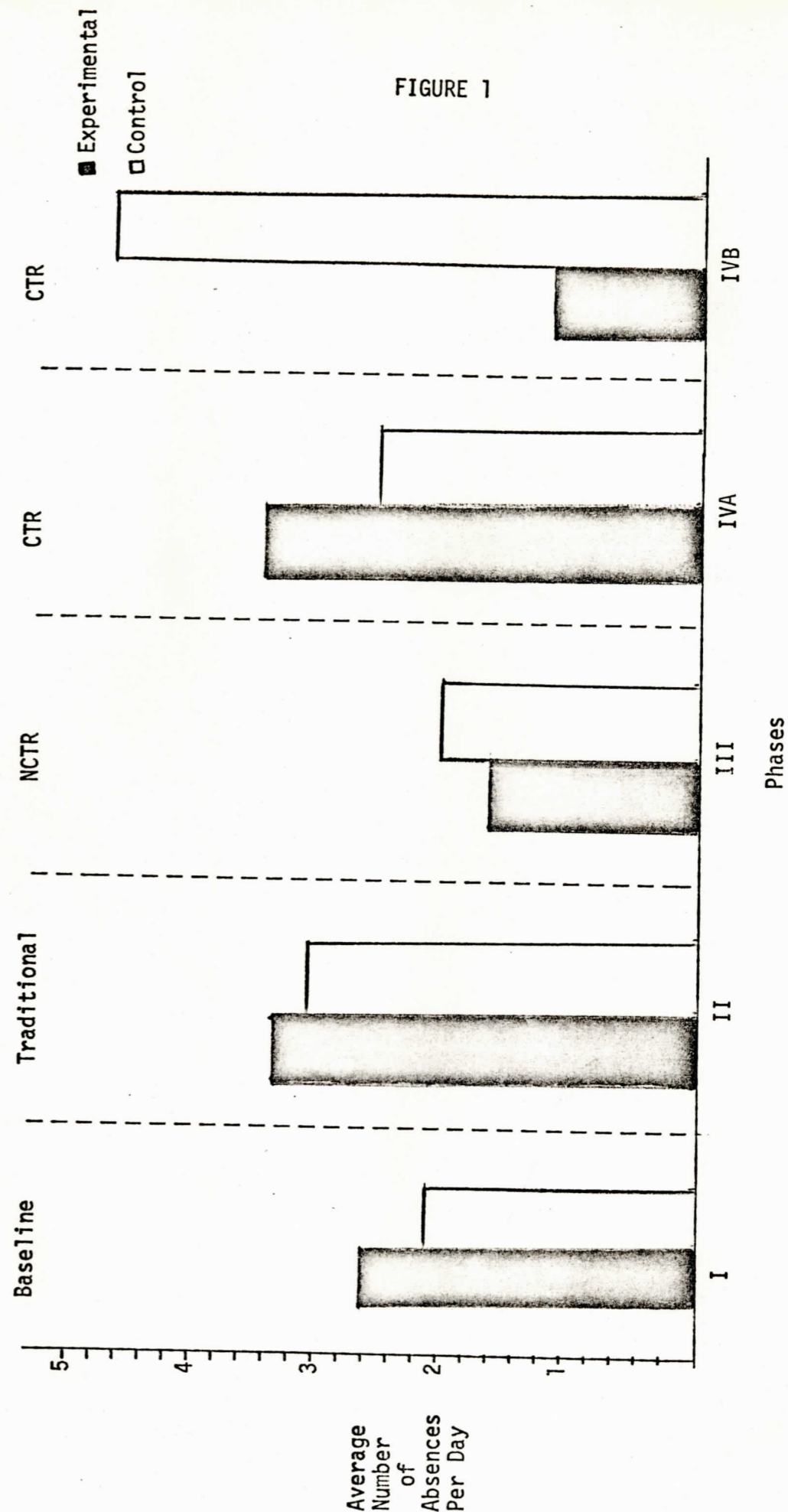


Fig. 1. Average number of absences per day for the experimental and control groups across treatment.

An analysis of variance revealed significant differences between the experimental and control group ($F = 7, df = 1/85, p < .01$) between Phases IVA and IVB ($F = 8.7, df = 2/170, p < .01$). Significant interaction between the groups was also present ($F = 24.7, df = 2/170, p < .01$) in the CTR treatment phase. Figure 1 illustrates the experimental and control groups did not differ significantly during the first three phases (baseline, traditional, NCTR) or during the first subphase of CTR.

It appears from Figure 1 that the presentation of contingencies during Phase IVB did in fact produce a marked reduction in the number of absences for that period. Analysis of variance revealed that no treatment other than CTR had a significant effect in the reduction of absentees.

Similar trends were discovered in each of the disruptive behavior categories. The total number of referrals for each group across treatment phases was reported. Figure 2 (p. 14) indicates that the number of referrals for the experimental group was lowest during the second subphase of CTR.

In Phase IVB there was a marked difference between the number of referrals for the experimental and control groups. It should be noted from Figure 2 that CTR seemed to be more effective in reducing disciplinary referrals for the experimental group than the previously applied treatments.

The rate of suspensions for the experimental group was also noticeably lower during the CTR phase of treatment. This is best

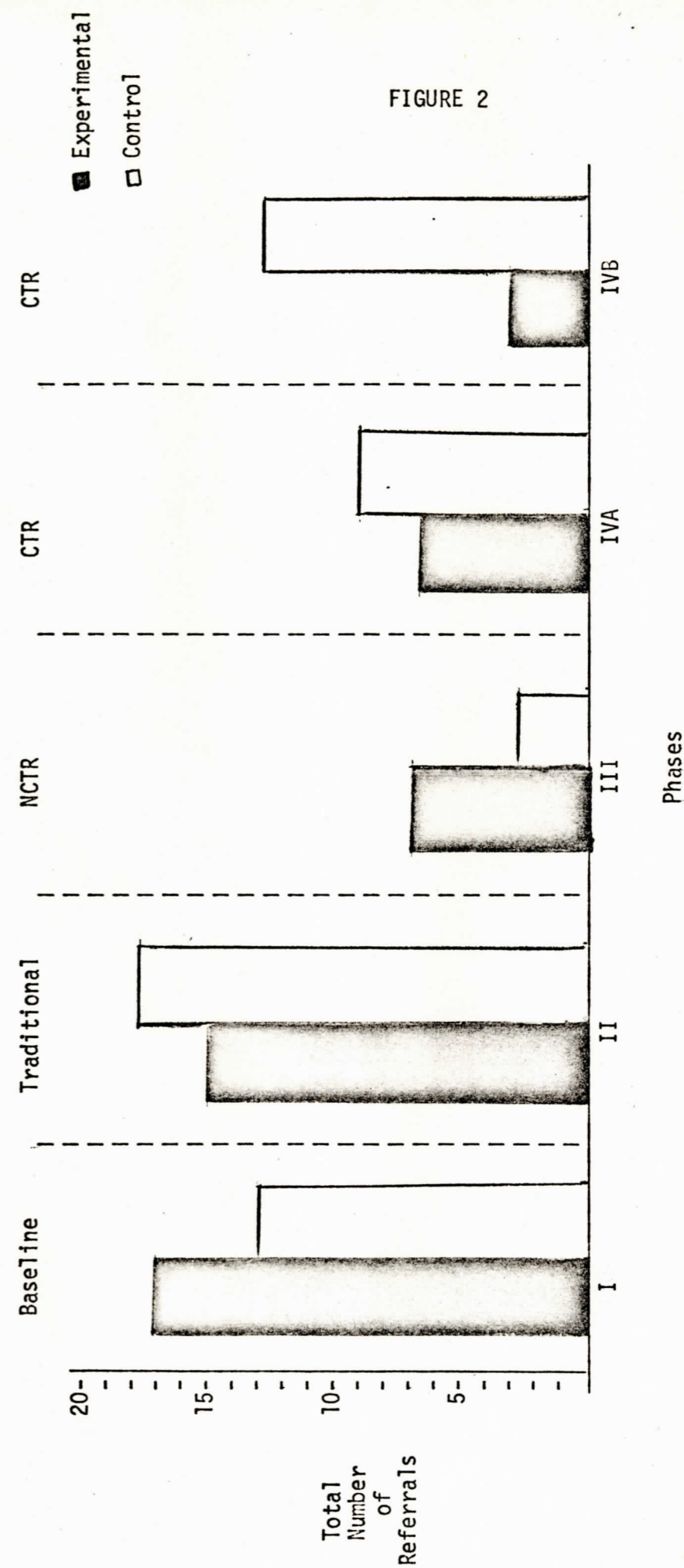


Fig. 2. Total number of referrals for each group across treatment phases.

demonstrated by Figure 3 (p. 16) which shows the rate of days suspended for the experimental group reduced to zero during Phases IVA and IVB. This was compared to the performance of the no-contact control group which maintained a relatively consistent rate of days suspended throughout the study. Figure 3 illustrates that CTR appears to be more effective in reducing disciplinary suspensions than traditional treatment or NCTR.

Weekly point totals for the experimental group were also collected during the two treatment phases which involved the application of the token economy. Figure 4 (p. 17) illustrates the mean number of points earned weekly during Phases III and IV. A paired t-test was used to determine if in fact there was a significant difference in the earning of points during the NCTR and CTR phases of treatment. Results indicated that there was a significant difference ($t = 1.77, df = 46, p < .05$) between the number of points earned from Phase III to Phase IVA. Further investigation revealed there was a marked increase in the average points earned during the last several weeks of CTR. This was evidenced by a highly significant difference ($t = 4.48, df = 46, p < .005$) in the mean number of points earned from the first (IVA) to last (IVB) period in Phase IV. Figure 4 illustrates the constant increase in the mean number of points earned by members of the experimental group during the two subphases of Phase IV.

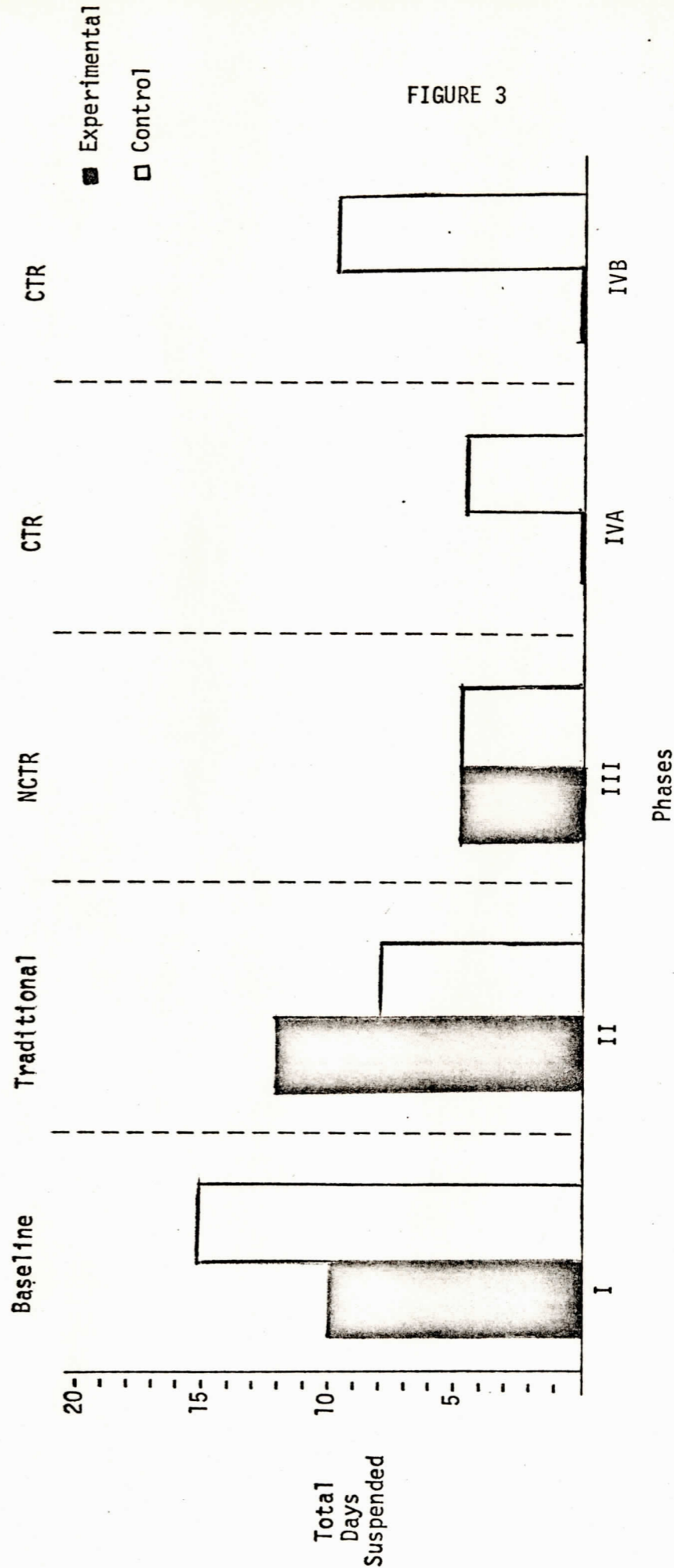


Fig. 3. Total days suspended for each group across treatment phases.

FIGURE 4

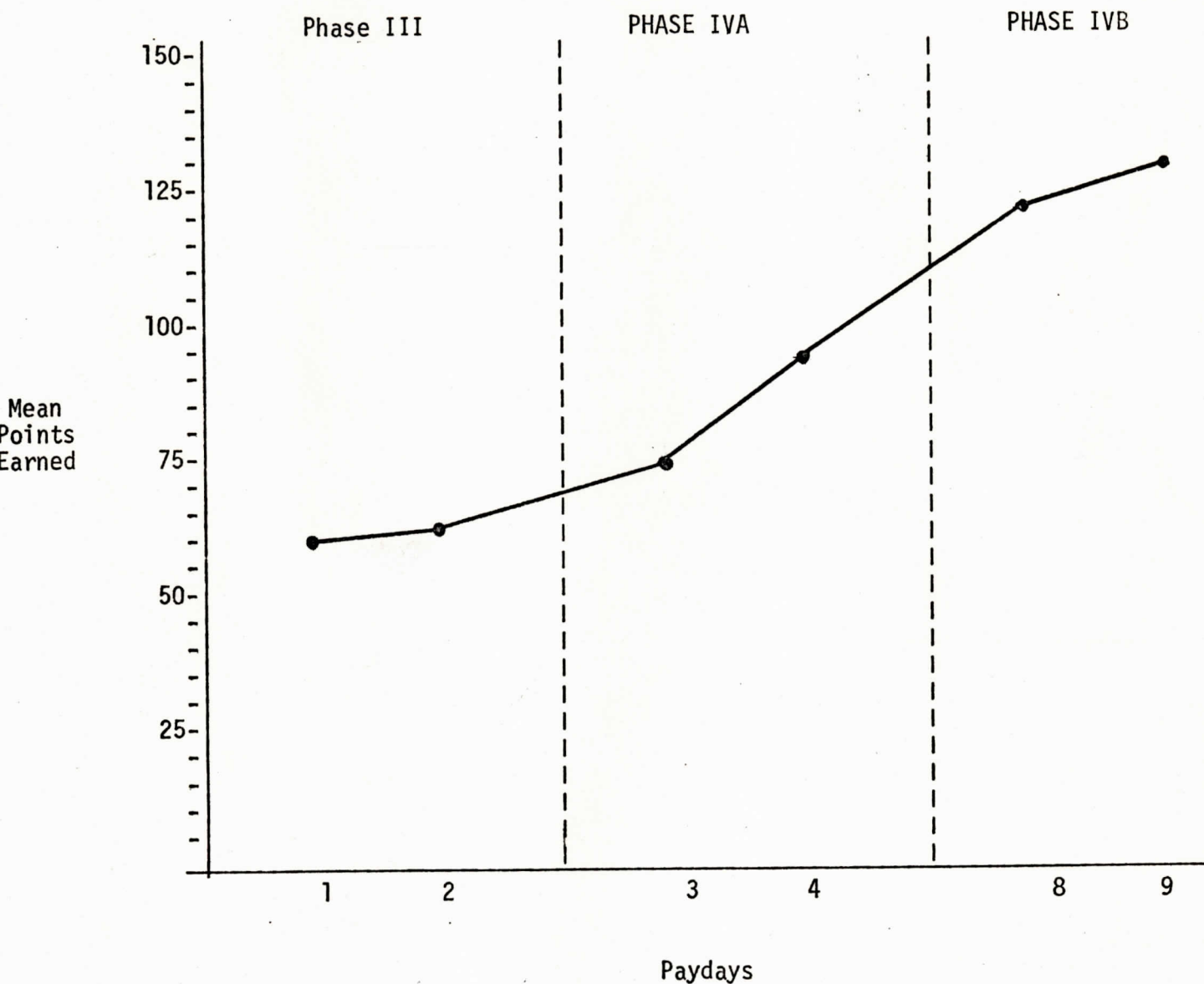


Fig. 4. Mean number of points earned weekly by students of the experimental group in Phases III and IV.

CHAPTER IV

DISCUSSION

The effects of contingent token reinforcement were significant in the improvement of attendance and grade point averages for the group receiving treatment. Contingent token reinforcement also seemed to have lowered the rate of days suspended and the rate of referrals for the experimental as compared to a no-contact control group. Results in each performance category indicated that CTR was more effective in improving academic performance and reducing truant and disruptive behavior than previously applied treatments (traditional counseling, NCTR).

The full effect of contingencies introduced in Phase IV appears to have occurred during the latter part of subphase IVB. As has been mentioned, there was a marked increase in the subjects' participation in the system during the last several weeks of CTR. The mean number of points is seen here as being a valid indication of the subjects' level of participation in the system. It seems the students' "response lag" or adjustment to the new schedule of reinforcement during the initial weeks of Phase IV was the major obstacle in producing statistically significant results during this period. One simple solution to correct for an initial performance lull as this would be the presentation of more immediate reinforcers. These back-up reinforcers could either be presented completely non-contingent of the

student's performance or contingent at shorter intervals (more frequent paydays). Contingent reinforcement at shorter intervals is suggested due to the fact that as payday approaches the frequency of the desired behavior tends to increase (Cohen, 1968). These more frequent paydays would tend to quicken the desired responses by reducing the time between the emission of a response and the presentation of a reinforcer. This schedule could then be gradually modified to the point where the system could operate effectively on a weekly pay basis (Vannote, 1974).

There was also an increase in the number of students who participated in the program from Phase III to Phase IV. During NCTR, 65% of the students in the project were actively involved in the token economy. With the introduction of contingencies in Phase IV, the level of participation increased to 82%. During CTR, teacher reports and comments indicated that there was a noticeable lessening of apathy with the subjects exhibiting a much greater level of interest in school as well as project activities. During the course of the token phases the amount of student involvement varied. All students did earn points, but a few were inconsistent in having their sheets signed, losing them, or turning them in with forged signatures. For these students (about 18%), the tokens seemed to be of little utility in effecting a marked behavior change. These instances of unresponsiveness to the program seemed to be evident in those students with more serious motivational difficulties. Increasing the value of the back-up reinforcers would probably have no effect on this group.

One of the most important conclusions that may be drawn from this study is that a token economy system can be implemented and effectively maintained by a behavioral manager within a school. A particularly good article about the institutional and interpersonal politics of such a program is presented by Richards (1975). Although there is little doubt of the importance of staff training, successful remediation programs have been carried out having only minimal levels of training (Merchenbaum, Bowers, and Ross, 1968; Vannote, 1974). This was made possible in this particular study by the extensive use of the student checksheet. The checksheet proved to be the most vital component of the system. The checksheet was successfully used as a sensitive evaluative tool to determine specific class difficulties, teacher interaction problems, and daily personal problems resulting from peer or parent contact. The checksheet also served as an excellent record keeping device which provided an accurate weekly record as to the student's performance. This proved very useful when needed for outside evaluators (probation officers, parents, youth counselors) who required the information for life decisions outside of the school environment.

Informal observations suggest that contingent token reinforcement had several unanticipated effects. Prior to the introduction of contingencies students rarely interacted with each other or with staff. During the latter part of the CTR phase, students could readily be observed discussing checksheets, teachers' comments, earnings to date, plans for purchases, and other system-related information. There was

also a noticeable increase in the number of unsolicited visits to the counseling office to "show off" their checksheets or discuss particular difficulties they might be having with a teacher. This was particularly evident in group sessions which were directly rewarded with the presentation of points. Attendance and participation seemed to markedly improve after the introduction of contingencies (CTR). The enhancement of social interaction has been documented in other studies (Atthowe and Krasner, 1968; Abrams, 1974) as being another treatment bonus offered by a token economy. Secondly, the students are forced to learn new words and methods in order to acquire the desirable back-up reinforcers. The fact that the situation was relatively objective made it possible to readily observe whether the system was understood and take corrective measures if there were difficulties. During the latter part of the study, many students had been successfully trained in tabulating their own checksheets, making purchases, and entering their transaction on the balance sheet. Thirdly, the students seemed to have developed a more favorable attitude toward school and their fellow students. Teacher and administrative reports indicated that approximately three-fourths of the students had improved their general attitude toward the school environment. Positive attitudinal changes via token systems have been reported by previous investigations (Milby, Pendergrass and Clarke, 1975). These and other unanticipated effects suggest that token systems may provide a far more suitable environment for developing many of the less specified behavioral changes than one might expect.

Two criticisms which have been leveled at token programs in recent years have been: 1) the cost; and 2) the extent of generalization of treatment effects. The expense of the program used here was negligible and could have been reduced further by utilizing the potential natural reinforcers which already exist in the school environment. Properly used, such events as recess, movies, and athletic and social activities could be arranged as consequences for strengthening desirable behaviors. The expense of such a program seems small when contrasted with the long-term cost to society in terms of human as well as economic resources lost by not educating these children properly. The second criticism was most recently represented by Levine and Fasnacht (1974) who reported that token programs have created undesirable side effects and have failed to reliably produce the generalization of improvements created in the token setting. Strong criticism of the research and conclusions of Levine and Fasnacht has been reported (Ford and Foster, 1976) which points out that most of the programs cited in the Levine and Fasnacht study were very successful in producing behavior change and seemed to have few observable adverse side effects on the subjects or their behavior. Although the controversy continues to rage, it seems that there is general agreement that token programs can be used effectively if the behavioral manager selects intervention and maintenance strategies based on a thorough, comprehensive assessment.

In summary, the program has demonstrated that a systematic procedure of applying contingent reinforcement via a token economy

can produce significant changes in delinquent misbehavior. In this study, a contingent token reinforcement program represented by a token economy has been successful in increasing academic and social performance, reducing absences and disruptive behavior, and of putting the reinforcement control of the student back into the hands of the faculty and staff. A token economy can be an important adjunct to any special program for apathetic or delinquent students.

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NAME _____ Grade/Section _____ Homeroom Teacher _____ Date _____

Teacher: Please indicate below by points and your initials how the student performed in your class. Also at the end of each five-day period your signature is necessary to validate points earned.

Period	Mon.	Tues.	Wed.	Thurs.	Fri.	Points	Performance
Homeroom							
1							
2							
3							
4							
5							

- 5 EXCELLENT - on time, has materials, participates well in class, on task 100% of class time.
- 4 GOOD - on time, has materials, participates well in class, on task 75% of class time.
- 3 FAIR - on time, has materials, participates well in class, on task 50% of class time.
- 2 POOR - on time, has materials, non-disruptive.
- 1 INAPPROPRIATE - has materials but disruptive (talking excessively, out of seat, fighting, sleeping, etc.)

Teacher Signature and Comment:

1. _____
 2. _____
 3. _____
 4. _____
 5. _____
 6. _____

Parent Signature and Comment:

APPENDIX B
Token Menu

How to Earn Points:

- (5) Each day of full attendance as indicated by five signatures per day.
- (0-5) According to points awarded by the teacher in each class attended.
- (3) Each day of no referrals to the dean's office.
- (1) For each letter grade of improvement on tests, papers, or projects (as compared to the last report card grade in that subject).
- (5) Appropriate group participation as determined by the counselor.
- (5) Bonus points for every member of the best weekly group as decided by the counselor.
- (15) Taking the checksheet home for parent signature and returning it the following day.
- (30) For every letter grade of improvement in each subject on report card (200 bonus points for honor roll).

NOTE: Suspected forgeries on class papers or checksheets will be checked and if discovered, will cancel the entire sheet.

What You Can Buy:

- (10) Candy Bar
- (30) Krystal Gift Certificate
- (30) Burger King Gift Certificate
- (10) Krispy Kreme Doughnuts
- (100) Kentucky Fried Chicken Coupon
- (150) Bonanza Sirloin Pit Coupon
- (125) General Admission Wrestling Tickets
- (75) Time in Favorite Class (One Period)
- (75) Library Time or Assisting Counselors (One Period)
- (100) Monthly Field Trip (Must Qualify)
- (1200) Bonus Field Trip I
- (1400) Bonus Field Trip II

APPENDIX C

Individual Balance Sheet

Project HOLD

Name _____ Grade Section _____ Counselor _____

Date	Previous Balance	Earned	Total	Spent	Items Purchased	New Balance