The Support and Maintenance of a Behavioral Teaching Methodology in the Public Schools

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THE SUPPORT AND MAINTENANCE OF A BEHAVIORAL TEACHING METHODOLOGY IN THE PUBLIC SCHOOLS

by

Sheryl M. Rippee

A Project Report
Submitted to the
Faculty of The Graduate College
in partial fulfillment of the
requirements for the
Degree of Specialist in Education
Department of Psychology

Western Michigan University
Kalamazoo, Michigan
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A contract study center was the site for two experiments involving the modification of teacher behavior. The Center was located in a rural high school of 300 students and 15 staff members. The Center was school-wide and utilized contingency contracting and peer tutoring in order to help students on individual academic assignments. Experiment I was conducted to examine the effects of using teachers to support and maintain the behavioral teaching methodology used in the Center. Results of Experiment I indicated that teachers were not as effective in supporting and maintaining the Center on a half time basis as University Personnel. Experiment II was an attempt to use student vocal prompts to increase the number of teacher referrals of students to a contract study center. Results of Experiment II showed no change in the number of teacher referrals as a function of student vocal prompts.
ACKNOWLEDGMENTS

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Finally, I want to extend my thanks and my love to Jamie Koerner for always believing in me. Guess what, sweetheart – I finally made it!

Sheryl M. Rippee
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INTRODUCTION

The role of psychology in education has been the subject of debate in recent years. The various factions within psychology view their role in the schools very differently. In his article "What Psychology has to Offer Education - Now". Bijou (1970) describes the philosophies of the three major groups in psychology regarding their role in the educational system. Bijou lends great support to the potential of behavior analysis to aid education. He relates what behavior analysis has to offer education as follows:

We can offer a set of concepts and principles derived exclusively from experimental research; we can offer a methodology for applying these concepts and principles directly to teaching practices; we can offer a research design which deals with changes in the individual child, and we can offer a philosophy of science which insists on observable accounts of the relationships between individual behavior and its determining conditions. (p. 102)

Since the publication of Bijou's article, many behavior analysts have done work in the educational environment. A lot of data have been generated by these psychologists regarding classroom management, behavior management techniques with children, curriculum, token economies, teacher training, etc.

Teacher training programs show teachers how to use behavior modification techniques in the classroom. In a study by Cooper, Thompson, and Baer (1970) two teachers were trained to attend to appropriate child responses in preschool classrooms. Four types of feedback were used by the experimenters to increase the amount of time that the teachers spent attending to appropriate responses of children in their group. Three forms of feedback were presented orally on a
daily basis, while one written form was presented every ten minutes during a two-hour observation period. The rate of attending to appropriate child responses increased for both teachers as a function of the feedback.

Clark and Macrae (1976) trained six teachers to use praise for academic responses and appropriate classroom behavior, correction procedures for incorrect academic responses and token fines. It was found that imposed and self-selected training packages using modeling, verbal feedback, graphic feedback, and grade and quiz contingencies, increased the use of those teaching skills. The teachers indicated a preference for the self-imposed training package, which allowed them to select the components to be used in training sessions.

Harris, Bushnell, Sherman, and Kane (1975) investigated the effects of instructions, feedback, praise, and bonus payments on increasing use of an appropriate reading text by four teachers. They found that instructions, feedback, and praise only produced clear effects with one teacher. The use of bonus payments, however, proved to be an effective procedure with all four teachers.

Parsonson, Baer, and Baer (1974) used observer feedback to train two aides, in a kindergarten-style program for institutionalized retardates, to attend to appropriate child behaviors. The aides were trained to apply generalized "correct" social contingencies to appropriate and inappropriate behaviors. The effect of training increased the proportion of appropriate behaviors attended to over baseline data for both aides. Follow-up data revealed that the results
of the study had been maintained.

One of the problems in using a teacher training program is that the school environment is often not receptive to change. Tharp and Wetzel (1969) address some of the areas of concern which lead to resistance on the part of the schools. One area of concern is that often the school personnel reject the idea of determinism. In addition they may feel that certain behavior modification techniques are not appropriate for use in the school. A second area of concern is that school philosophy often seems to be that learning is something that a normal child enjoys and "wants" to do, and therefore s/he should not have to be rewarded for engaging in learning activities. On the other hand, a child who does not enjoy learning or want to engage in learning activities may be viewed as deviant by the school. The third area of concern is that school personnel may have difficulty in providing consequences to children. Some reasons for this include disorganization, external constraints within the school, and difficulties working with the behavior analyst.

All of the above areas must be addressed if the behavior analyst wishes to be successful in the school environment. Projects which have been successful in the schools have reaped many benefits according to Tharp and Wetzel (1969). These benefits include increased academic achievement and removal of misbehavior for students, as well as changes in the school personnel used as mediators, and changes in the project staff.

One means of intervention in the school environment is through
the use of consultation versus direct intervention. Consultation enables the behavior analyst to help the teacher work with problem student behavior. Recent literature in psychology and education has addressed the subject of effective consultation in the natural environment. Cherniss (1978) published a "Consultation Readiness Scale" to aid consultants in the field of human services. The scale was based on the assumption that consultees were all at different levels of "readiness" for consultation. Consultants were to use the scale to determine the "readiness" level of consultees, and as a guide for moving the relationship to a higher level. Six levels of readiness were specified on the scale as well as general intervention strategies for each.

In an article by Sandoval, Lambert, and Davis (1977) the consultant and the consultee are both responsible for successful consultation. The consultant must be aware of the struggles of the consultee in certain phases of consultation, such as relationship building and problem solving. At the same time the consultee needs to acquire an understanding of the different phases of consultation in order to benefit from it.

Greiger (1972) points out six areas of concern that teachers may express which may interfere with behavioral consultation: 1) the child needs fixing, 2) it is wrong to express negative feelings, 3) children must not be frustrated, 4) the "should-ought" syndrome, 5) the "he make me" syndrome, and 6) children are blameworthy for their misdeeds. Such concerns should be discussed with the teacher,
and a rationale for behavioral intervention should be provided before consultation will be effective.

Teacher training programs and consultation are both ways of helping teachers in the classroom. They depend, however, upon the use of outside agents such as psychologists. An alternative to outside agents may be the use of students in the classroom as change agents. Students have previously been shown to be effective change agents in several different environments. Geller, Farris, and Post (1973) studied the effects of student prompting on consumer purchasing in a grocery store. Fifth-grade students were used to teach basic arithmetic skills to kindergarten students (Johnson & Bailey, 1974), and a fifth-grader was also used to modify the maladaptive behaviors of four first-grade students (Surratt, Ulrich, & Hawkins, 1969).

Students have also been used as effective change agents of teacher behavior. In a study by Sherman and Cormier (1974) two students served as change agents for one fifth-grade teacher. The students' disruptive behavior was modified without the teacher's knowledge and the teacher was then monitored for changes in behavior, attitude toward the students, and quality of verbal statements. Results indicated that the student behavior change decreased negative comments and behavior, and increased positive comments and behavior of the teacher toward the students.

In a similar study, Polirstok and Greer (1977) used one student to effectively modify the rate of approval and disapproval of four teachers. A social reinforcement training procedure was used to
help a problem student change the verbal and non-verbal approval and disapproval of four of the students' teachers. Role-playing and taped cues were used to train the student in dispensing social reinforcement to her teachers. Disapprovals decreased for all of the teachers and approvals increased for three out of four teachers during intervention. A post-check showed that the teachers continued to display more approvals than disapprovals.

Another way in which students have effectively modified teacher behavior is through the use of prompts. Whenever a response occurs at a very low rate or strength, has less than acceptable form, or fails to occur at appropriate times, a prompt may be used to evoke that response. There are different forms of prompting. A simple direct prompt for appropriate behavior was used by Krumboltz and Krumboltz (1972). Consistent rules or "contingencies" have also been used as an effective form of prompting (Smith & Smith, 1964).

Auditory prompts have been used to increase the rate of teacher praise (VanHouten & Sullivan, 1975). This form of prompting was shown to be more effective than self-recording because it provided the teacher with a reminder to praise appropriate student behavior.

Praise and feedback was used to increase teacher referral of students to a contract study center (Skinner, 1981). Tangible prompts in the form of cards and posters were used to provide praise and feedback to teachers. Tangible prompts did slightly increase the number of teacher referrals. During the Skinner (1981) study, the Guided Study Center served as the contract study center.
as it does in the present study. At that time the Center was managed totally by the University staff. The University staff served as a discriminative stimulus to use the Center by their presence in the school, and were also responsible for verbally prompting teachers to use the Center. During the present study, however, the University staff was reduced by half and no tangible prompts were used with the teachers.

At this juncture a description of the Guided Study Project seems appropriate. The Guided Study Project was a contract study center, set up to assist high school students on academic assignments. Peer tutoring and contingency contracting were integral parts of the program at the Guided Study Project, where the present research took place. The Guided Study Project is described below, followed by a review of the literature on peer tutoring and contingency contracting.

Description of the Model

The Guided Study Project (GSP) is operated by one supervisor who serves as the project manager and student staff members who function as peer assistants to student participants. Help is available in two major areas: 1) academic work, and 2) study skill development.

Specifically, the GSP is located in a room in the high school called the Guided Study Center. The Center provides a structured setting where students can come to work on academic assignments on a contractual basis. When a student comes to the Center, a performance contract is written (see Figure 1). The contract includes
a clear specification of the type and amount of work to be accomplished in the time allowed. Staff members monitor progress and provide assistance if requested. When the work is complete, a review is done by student staff based on the pre-set criterion stated in the contract. If the rules and procedures of the Center are followed, the student may return to the Center on another day whether or not the initial contract was completed. Students may request to use the Center or they may be referred by a teacher. At the end of the work period, the teacher authorizing the visit receives a copy of the contract on which the student worked, thus informing him or her of the results of the work period. The entire process is monitored by the Center Manager.

Teachers are asked to help identify potential student staff members and to specify academic activities that are most in need of attention. Any subject area may be studied in the Center. Peer assistance, however, is provided only if a student staff member with expertise in an area of study is available. Typically, several student staff members with a variety of skills are available to student participants at any one time.

The primary goal of the Guided Study Project is to aid students by providing structured study time during study hall or within class study periods. The Center staff can provide supervision and needed individual attention to a substantial number of students, thus supplementing work done in other settings. Additionally, the Center staff can help student participants to develop study skills through the
structured-supervised environment and the use of contracting procedures.

Specific Center Procedures

The steps necessary for the successful use of the Guided Study Center are listed below:

1. The student requests a hall pass from the classroom teacher to come to the Center, or the teacher suggests that the student come and provides him/her with a pass.

2. The student brings the pass to the Center and determines if there is an opening. If there is an opening, a contract (see Figure 1) is written with the student for the work to be done in the time remaining in the hour. The pass is also stamped and returned to the teacher to indicate the time that the student arrived and his/her location in the building. If no opening is available, the pass is stamped, the time is noted on the pass and the student is asked to return to class.

3. If a contract is written, the student begins work and is asked to raise his/her hand if assistance is needed.

4. During the work period, the student's behavior is rated in terms of management objectives (see Figure 1).

5. When the student indicates that he/she is finished with the work, or when the time available for work expires, the work is reviewed and a "complete" or "incomplete" result is noted on the form.
6. If there is time remaining after the student finishes the work specified in the original contract, the student can choose to write an additional contract or to return to class.

7. At the end of the work or after time expires, the student is given a carbon copy of the contract with results marked to return to the teacher. At the bottom of the contract, the time of departure and destination are noted and the manager signs the pass.

Peer Tutoring

Educators have long sought a way to provide individual programs and attention to all of the students in a classroom. Clearly, one teacher is not able to provide the support needed for 25 or 30 individual student programs. One way to provide individualized programming is through supplementary instruction. There are several forms of supplementary instruction, but two of the most promising are peer tutoring and contingency contracting.

Peer tutoring has been used successfully in a number of settings as a means of individualizing instruction. Harris and Sherman (1973), found that unstructured peer tutoring improved the accuracy and performance of fourth and fifth grade students on math assignments. The students' performances on math problems of the same type and difficulty in two daily math sessions were compared. The peer tutoring sessions resulted in higher accuracy and increased performance rate for students. An independent-study control condition
was also run and the results suggested that the interactions between
students may have been partially responsible for the good results.

In a study by Dineen, Clark, and Risley (1977), peer tutoring
was shown to be academically beneficial to the tutor as well as the
tutee. Three elementary students were placed in a peer tutoring
program to work on the acquisition of spelling words. Each child
tutored another child, was tutored by another child, or neither
tutored nor was tutored. A simultaneous comparison of each child's
increase in performance on word lists revealed that spelling im-
proved equivalently for tutoring or being tutored.

Contingent peer tutoring was effectively used to reduce dis-
ruptive classroom behavior (Robertson, DeReus, & Drabman, 1976).
Eighteen second grade students received contingent or non-contingent
tutoring by fifth graders or college students in a program to reduce
disruptive classroom behavior. No difference was found in the level
of disruptive behavior based upon the difference in the ages of the
tutors (fifth grade or college student). Contingent tutoring versus
non-contingent tutoring did produce a significant difference in the
level of disruptive behavior.

Peer tutoring with group contingencies has also been effective
in improving performance on arithmetic assignments by behavior-
disordered adolescents (McCarty, Griffin, Apolloni, & Shores, 1977).
Group-oriented contingencies were used to increase the arithmetic
problem-solving rates of four behavior-disordered adolescents in a
psychiatric hospital. Coyne (1978) also used peer tutoring with
group contingencies to improve test performance by college students. Students in a college course were rank ordered and paired with other students who acted as peer tutors, or were assigned to an independent group. Performance on tests improved for every student placed with a high tutor, but did not improve for the independent students. The majority of the students participating in the study were in favor of peer tutoring and felt that it improved academic performance.

Students can be trained as effective peer tutors with minimal time and effort. Parson and Heward (1979) used a simple training package to teach primary special education students to be effective peer tutors. The ease of training and the academic benefits to both tutors and tutees makes peer tutoring a promising method of individualizing instruction.

Contingency Contracting

Contingency contracting is another method of providing individualization in a school setting. Contracting as a means of individualization is not a new idea; it was used as early as 1922 in the Dalton Plan (Parkhurst, 1922). More recent descriptions of contingency contracting date back to Homme, Csanyi, Gonzales and Rechs (1969). Since Homme et al., contingency contracting has been described as everything from a simple agreement between two people (Godfrey, 1976) to a more complex written contract. DeRisi and Butz (1975), point out that most contracts specify a time frame, the exact tasks required, and the consequences if the tasks are/are not completed. In a classroom situation this usually involves the teacher specifying
the time frame and the academic tasks necessary for completion. The student is then presented with a grade or privilege (reinforcer) upon successful completion of the contract. This relationship may be written in the form "If you do X, you will get Y" (Homme et al., 1969) and is signed by both teacher and student. This type of basic contracting has been successfully used in school-wide contracting centers (Farris & Redmon, 1979).

The use of contracting has been shown to be most effective when used on an individual basis (Homme et al., 1969). Another essential ingredient of successful contracting is the negotiation of the contract terms (Gambrell & Wilson, 1973). A student should be allowed to negotiate the time frame, academic tasks, and reinforcers involved in each contract.

Aside from allowing educators to individualize instruction, contingency contracting may produce positive side effects in some students. These include increased study skills (Godfrey, 1976; Farris & Redmon, 1979), as well as student independence and increased reliance upon ancillary learning tools which are not usually acquired in regular classroom situations (Dunn & Dunn, 1972).

A study which dealt with contingency contracting in the schools was conducted by Cantell, Cantell, Huddleston, and Woolridge (1970). The study examined changes in first through eleventh-grade student academic behaviors as a function of contingency contracting. A student was referred to a contract center where a contract was written which explained the changes in contingencies to be used by the pro-
gram's contingency managers, teachers, and parents. Farris and Redmon (1979) conducted a similar study at a contract study center in a high school. Students were referred to the center by their teachers in order to work on individual assignments. A contingency contract was used in the center which specified the academic task to be completed, the time allowed to complete the task, and which also included a behavior checklist to be filled out by the center staff while the student worked in the center. Contingency contracting was effective in improving the completion rate of academic assignments by students. It also provided an effective means of giving teachers feedback on student performance in the center.

MacDonald, Gallimore, and MacDonald (1970) also conducted a study which used contracting in a high school. MacDonald et al, used "deals" to increase school attendance. Their deal is similar to the contracts used by Farris and Redmon (1979), as well as those used in the present study, although the contracts are written for academic behavior rather than attendance.

A feasible approach to individualized instruction within the school appears to involve both peer tutoring and contingency contracting. However, supervision of these programs is a problem. A school-wide center, set up to provide individualized instruction through peer tutoring and contingency contracting, may be a viable alternative to individual classroom programs. One center would be able to serve an entire school which would decrease significantly the number of adults needed to supervise individual programming.
Contingency contracting would enable the center to work with students from any grade on any assignment at the same time. The contracts would allow students to work at their own pace, while giving the center supervisor an easy way to monitor each student's progress. A center would serve as an alternative means of helping students with whom teachers might not have the time to work with otherwise. Using peer tutors in the center would also provide added assistance to students and would give the school an opportunity to use students as a valuable resource and to involve them more in the learning process.

The research literature previously cited has dealt with the modification of teacher behavior as well as ways of individualizing instruction in the schools. Both of these areas were the basis for the present studies. Two experiments were conducted which involved the modification of teacher behavior in relation to a school-wide contract study center. Experiment I was designed to aid teachers in the support and maintenance of a behavioral teaching methodology which utilized contingency contracting and peer tutoring. Experiment II, which was conducted simultaneously, was an attempt to use student vocal prompts as the sole means of increasing teacher referrals of students to the Guided Study Center.
EXPERIMENT I

Experiment I was conducted to examine the effects of using teachers to support and maintain a behavioral teaching methodology in a school-wide center. The support and maintenance of the Center was shifted from full-time University personnel to half-time University personnel and half-time teachers. This shift involved the addition of a small amount of supervisory time for each teacher per week.

Method

Subjects

The subjects of the study were the administrators, teachers, and students of a rural, southwestern Michigan high school. Approximately 300 students in grades 9-12 attended the high school, which was staffed by 15 teachers and administrators.

Setting

The study was conducted in a rural school district of approximately 1,000 students in southwestern Michigan. The Guided Study Center, which was the site of the study was located in a room adjacent to the library in the high school. The room contained bookshelves, student tables, chairs, and a desk used by the project supervisor and Guided Study staff.
Procedures

The Guided Study Project had been totally supervised by graduate students in psychology from Western Michigan University for the previous five years of operation. During the intervention phase of the study supervision of the Guided Study Center was partially turned over to the high school teachers.

The project supervisor and the experimenter were in charge of the transition in supervision from Western Michigan University graduate students to high school teachers. The first step of the transition process was discussing the proposed supervision changes with the high school administrative and teaching staff. After it was determined that the high school staff supported the proposed changes, the project supervisor conducted an in-service training session for the teaching staff. The in-service was used to acquaint the teaching staff with Guided Study procedures.

After completion of the in-service, a supervision schedule for the Guided Study Center was determined. The teaching staff was assigned two mornings (8-12a.m.) and three afternoons (12:30-2:45p.m.) of supervision per week. The remaining three mornings and two afternoons per week were supervised by Western Michigan University graduates students. Each teacher was assigned one hour per week, during their planning time, when they were to spend 10-15 minutes supervising the operation of the Center. Such supervision included: checking that student staff were in attendance, filling out attendance sheets, and filling out and signing contracts.
The project supervisor spent one morning per week on-site, directly supervising the project. During this time he was available to the teaching staff, in case they had questions about or problems with the operation of the Center. Assistance was also available from the graduate students who supervised the project during their assigned periods. The graduate students had all previously spent time supervising the project and were knowledgeable about the operation of the Center.

Aside from these changes in supervision, all other elements relating to the operation of the Guided Study Center remained the same.

A comparison was made of the usage and efficiency of contracts before and after the teaching staff were involved in direct supervision of the Center. The measures which were used included: the number of contracts written, the percent of students contracting once and more than once, the number of students contracting per grade level, and the percent accuracy on four major sections of the Guided Study contract. The four sections of the contracts which were examined were: 1) The time allowed to complete the assignment, 2) the description of the academic assignment which the student would be working on, 3) the criterion for completion of the assignment, and 4) the signatures of the staff member filling out the contract, and the student (See Figure 1).
IN THE NEXT ___ MINUTES, I WILL ACCOMPLISH THE FOLLOWING TASK(S):

**TASK 1**
**DESCRIPTION:**

**RESULTS**

**COMPLETE**

**INCOMPLETE**

**CRITERION:**

**RESULTS**

**COMPLETE**

**INCOMPLETE**

**TASK 2**
**DESCRIPTION:**

**RESULTS**

**COMPLETE**

**INCOMPLETE**

**CRITERION:**

I UNDERSTAND THAT IF I WORK QUIETLY AND THAT IF I HAVE MY WORK REVIEWED AT THE END OF THE PERIOD, I CAN CONTINUE TO USE THE GUIDED STUDY CENTER.

**STAFF SIGNATURE**

**STUDENT SIGNATURE**

**REVIEW INFORMATION**

1. Obtained a pass and had it signed by teacher. Circle One
   Yes No
2. Completed a contract form and had it signed. Yes No
3. Arrived at the center on time from class. Yes No
4. Began working within 4 minutes after filling out contract. Yes No
5. Remained on task 90% of the time. Yes No
6. Refrained from disturbing others. Yes No
7. Obtained feedback on contract and review form before leaving the center. Yes No
8. If left center, took a pass and returned within five minutes. Yes No

**Pass Information**

Time left center Returning to

Signature of Coordinator

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RESULTS OF EXPERIMENT I

Figure 2 presents the number of complete and incomplete contracts per week for the eleven weeks during which the Guided Study Center was open. The number of contracts written per week ranged from a low of 29 the final week of the semester, to a high of 64 during the previous week. The average number of contracts written during the eleven week period was 43. Data from the Fall of 1980 indicate that contracts were written at a higher rate per week (see Figure 2). The number of contracts increased from 50 contracts per week to over 100 contracts per week, with an average between 60-80 contracts per week. The current data do not show the variability in the number of contracts written as being as closely tied to the six-week grading periods as the previous year. They do, however, show a similar decrease during the week previous to Christmas vacation. The contract completion rate for both years was stable and high.

Figure 3 presents usage in terms of number of contracts and not number of students. A student could write more than one contract per week or per day. Approximately one quarter of the students in the high school (68) used the Center at least once. Figure 3 displays the percentage of students who contracted once and more than once during the eleven weeks. Most often a student came only once and did not return; however, a large proportion of students wrote two to five contracts. This is similar to the Fall of 1980 when the most students wrote two to five contracts.
Figure 2. The number of complete and incomplete daily contracts per week for eleven weeks of operation.
Figure 2. The number of complete and incomplete daily contracts per week for eleven weeks of operation.
Figure 3. Percent of students who wrote contracts in the Guided Study Center who contracted once and more than once during eleven weeks of operation (N=68).
Figure 3. Percent of students who wrote contracts in the Guided Study Center who contracted once and more than once during eleven weeks of operation (N = 68).
Figure 4 presents the number of students who wrote contracts in the Guided Study Center by grade level. Most of the students who participated in the Guided Study Center were freshmen (grade 9). As grade level increased, usage of the center decreased. Data from the previous year on usage by grade level yielded similar results.

The contracts written in the Guided Study Center were reviewed to determine the accuracy of staff in completing the forms. The contracts were divided according to whether the teaching staff of the high school or graduate students from the University were assigned as Center Managers during that time. A total of 473 contracts were reviewed. Figure 5 presents the results of this process in terms of percent accuracy by contract sections for both groups.

Contracts reviewed for the University-supervised group were completed with a high degree of accuracy in three areas. The only problem noted was with the criterion statements. Most often this was evidenced by the lack of observable or verifiable behavior being used as a criterion statement (i.e., "read Chapter 5 in History book"). The current year's data parallel the data on percent accuracy of contract sections for the previous year when graduate students were the only ones utilized as Center Managers.

Contracts reviewed for the teaching staff group were completed with a high degree of accuracy in the area of time allowed to complete the assignment. In the other three areas percent accuracy ranged between 70-77%. There was a significant difference in the accuracy of contract sections between the two groups.
Figure 4. The number of students who wrote contracts in the Guided Study Center by grade level for eleven weeks of operation.
Figure 4. The number of students who wrote contracts in the Guided Study Center by grade level for eleven weeks of operation.
Figure 5. Percent accuracy of contract sections as completed by Guided Study Center student staff under the supervision of graduate students or the high school teaching staff for eleven weeks of operation (total contracts reviewed 473).
Figure 5. Percent accuracy of contract sections as completed by Guided Study Center student staff under the supervision of graduate students or the high school teaching staff for eleven weeks of operation (total contracts reviewed 473).
EXPERIMENT II

Experiment II was designed to examine the effects of using student vocal prompting as the sole means of increasing teacher referrals of students to the Guided Study Center. The experimenter wished to determine whether or not student prompting would be effective as a means of increasing teacher referrals to the Center without the use of tangible prompts or staff prompts.

Method

Subjects

Three high school teachers served as the subjects for Experiment II. The teachers who were selected had not referred any students to the Guided Study Center for the four weeks previous to the start of the study. The teachers who were selected taught mathematics, economics, and home economics to students in grades 9-12.

Setting

The study was conducted at a high school in a predominantly rural community. The school population was comprised of approximately 300 students (grades 9-12) and 15 teachers.

Design

A multiple baseline design across subjects was used in Experiment II.
Procedure

Each teacher in the experiment was assigned a student from their class to present vocal prompts and take data on teacher behavior. Two of the selected students were current Guided Study student staff members. The remaining student was selected from a list of reliable students provided by the teacher. The selected students were instructed to choose another student from class who would be willing to participate in the experiment and who also had a low rate of absenteeism. The second group of students were used to take reliability data for the experiment.

Vocal prompts were given by the students during the same hour for all teachers. The students recorded on a data sheet the exact prompt given and the teacher response immediately following the prompt. The students taking reliability marked on the same data sheet whether or not (yes or no) they agreed that the prompt was given and that the teacher responded as recorded on the data sheet. If the student prompter was absent, then their partner presented the vocal prompt and recorded the response. The experimenter checked reliability on ten percent of the day's data were collected. The experimenter recorded the vocal prompt and teacher response on a separate data sheet in order to check reliability. Reliability was computed by the number of scored agreements divided by the number of scored agreements plus disagreements multiplied by 100:

\[
\frac{\text{Scored Agreements}}{\text{Scored Agreements} + \text{Disagreements}} \times 100\% \text{ Reliability}
\]
Student prompters and their partners were trained in vocal prompting by the experimenter in the Guided Study Center before the implementation of Experiment II. Vocal prompting training sessions lasted approximately 15 minutes and consisted of demonstrations by the experimenter and role-playing by prompters and their partners. Each student chosen for Experiment I demonstrated appropriate vocal prompting behavior for the experimenter before they were allowed to participate in the experiment. Appropriate prompts were similar to the following, "May anyone go to Guided Study this hour?", "Can people go to Guided Study after the quiz?", "Can we work on _____ at Guided Study?".

A direct dependent measure of the effect of the vocal prompts procedure was the number of students sent to Guided Study by each teacher during the prompted hour and the other hours of the school day. An indirect dependent measure was the data collected on each teacher's response immediately following a vocal prompt.

The criterion level for Experiment II was three students sent to Guided Study by each teacher during the prompted hour 80 percent of the days the Center was open. Data were collected on the number of students sent by each teacher during other hours, but these data were not used to establish criterion.
Results of Experiment II

Figure 6 presents the number of students referred to the Guided Study Center by each of the subjects for the eleven weeks during which the Guided Study Center was open. Each subject had a zero rate of student referrals to the Guided Study Center during the Baseline phase. The rate of student referrals to the Guided Study Center did not increase above zero during the intervention phase for any of the subjects. Reliability between student prompters and student reliability ranged from 90-100%. Reliability on student prompters was taken by the experimenter during approximately 10% of the sessions prompted and was 100% for all student prompters.

Based upon these data, it would appear that vocal prompting by students is not sufficient by itself to establish and maintain a behavior not previously in a teacher's repertoire. There are several factors which may account for this. First of all, vocal prompts have no lasting product which may be referred to later, such as a written prompt, and therefore may not be a strong enough form of prompting to use as the sole means of establishing a behavior. Secondly, vocal prompts by students may not have the same impact on behavior as those made by authority figures i.e., principals, superintendents. Thirdly, teachers exhibit behaviors which may directly conflict with referring a student to a Guided Study Program, such as giving lectures, demonstrations, tests, etc.
Figure 6. The number of students referred to the Guided Study Center during third hour for eleven weeks of operation
Figure 6. The number of students referred to the Guided Study Center during third hour for eleven weeks of operation.
A difficulty encountered by the experimenter during Experiment II was getting student prompters to show up for meetings and turn in data sheets consistently. This was especially difficult with students who were not members of the student staff of the Center. Future researchers in this area may want to include a contingency for attendance at meetings and turning in data sheets on time. Another difficulty which was reported by students was the feeling by the prompters that they were "harrassing" the teacher by daily prompting. Having student prompters and their partners take turns prompting is one way of alleviating this problem.

The data from Experiment II closely parallel the data produced by the Skinner (1981) study. Skinner used tangible prompts as forms of praise and feedback to increase teacher referrals of students to a contract study center. The Guided Study Project was the center used in both studies. While the Skinner study did produce a small increase in teacher referrals, Experiment II did not produce an increase in teacher referrals through the use of student vocal prompts. Neither study showed prompting to be an effective means of changing teacher behavior by itself. One possible explanation is that prompting may not be a strong enough method of behavior change to be effective when other variables are held constant.

The data from Experiment II do not support previous research by Sherman and Cormier (1974) and Polirstok and Greer (1977) which indicated that student prompting was a sufficient means of changing teacher behavior. In both studies, however, student behavior change was used as the prompt to change teacher behavior, while in the
present study a vocal prompt was used which was not associated with any other non-verbal behavior change on the part of the student prompters. The data from Experiment II indicates that further research in this area is warranted in order to isolate the variables which are responsible for the effective use of students as behavior change agents in the schools.
DISCUSSION

Contingency contracting was used successfully with students on an individual basis in a school-wide center during these experiments. The Center had been in operation for five years previous to the present study, which may account for the relatively stable rate of student usage and accuracy of completed contracts during the study. Sophomores, juniors, and seniors had all had at least one year of previous exposure to the Center, while freshmen had exposure to a similar center at the Middle School.

Data from Experiment I indicates that more students attended, had contracts filled out accurately, and returned to the Center when University supervisors were present. There are several possible reasons for this. First of all, the University supervisors were in the Center for 3-4 hours at a time, but the teaching staff were only required to check-in for 10-15 minutes at the beginning of each hour. In this respect, the University supervisors were available more to help students with their academic assignments. Second, all of the University supervisors had previous experience working in the Center, while the teaching staff was trained on Center procedures just prior to the start of the experiment. Third, all of the University supervisors were graduate students in psychology and were familiar with the research projects being conducted at the Center.

One problem that occurred during Experiment I was a lack of student staff from the high school to work in the Center. This left several hours during the day when there were no student staff members.
to serve as peer tutors for student participants. This also caused a severe lack of coverage at the Center on the days when the teaching staff served as supervisors. Another problem that occurred was a lack of consistent supervision by the teaching staff. They often failed to show up for their appointed hour of supervision which left the Center without supervision for extended periods of time. There were some complaints from teachers who sent students down to complete academic assignments only to find that the Center was unsupervised and either the students returned to class, or in many instances, spent the hour talking to friends in the Center. The credibility of the Center was diminished by these problems and may have resulted in fewer student referrals from some teachers. Future studies in this area should address these staffing problems to insure the smooth functioning of the Center at all times.

The data from Experiment I supported the findings of Farris and Redmon (1979). During the hours when the supervision of the Center was consistent, student participants completed contracts for academic assignments at a high rate as they did during the Farris and Redmon (1979) study. The number of students who attended the Center by grade level and the accuracy of completed contract sections also coincided very closely with the Farris and Redmon (1979) study.

The contract study center used in Experiment I was similar to the one used by Cantell et al. (1970). The Cantell et al. (1970) study also used a school-wide center which teachers could refer students to for help on individual academic assignments. Contingency contracting was also a component of the center, however, the parents
of the students were included as contingency managers, which was not done in the present study. The Cantell et al. (1970) study produced increases in student performance rates on academic assignments which is consistent with the findings of Experiment I.

An area of interest for future research may be the effect of peer tutors on the accuracy and completion rate of contracts in a school-wide center. Further research on the effect of teaching staff supervisors versus outside supervisors may also be helpful in determining whether or not students react differently to teachers in a setting outside of the classroom. Using teachers as supervisors may have a deleterious effect on students who view the center as an alternative to the classroom where they can complete assignments without the constant supervision of the teacher. There is also the possibility that certain teachers would have a negative impact upon students who had done poorly in their class.

Experiment II was run in conjunction with Experiment I to assess the effects of vocal prompts by students on the number of teacher referrals to a contract study center. The data indicate that vocal prompting alone is not a strong enough method of behavior change to affect a teacher who is also affected by many other outside variables such as class preparations, announcements, attendance, memos from the principal, etc. Another possibility is that students may not have the influence to change teacher behavior solely through the use of prompts because of their subordinate position in the classroom.
BIBLIOGRAPHY


