Effects of Contingency Contracting on the Academic Performance of Special Education Students

Nock

Follow this and additional works at: https://scholarworks.wmich.edu/masters_theses

Part of the Curriculum and Instruction Commons

Recommended Citation
https://scholarworks.wmich.edu/masters_theses/1719
EFFECTS OF CONTINGENCY CONTRACTING ON THE
ACADEMIC PERFORMANCE OF SPECIAL EDUCATION STUDENTS

by

Carolyn Marie Nock

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
August 1982
The purpose of this study was to determine the effects of contingency contracting between parent and child on improving the academic performance of three special education students, ages 14-16, enrolled in a mainstream English class. Two of the subjects had been certified as emotionally impaired, the third as learning disabled. A multiple-baseline across-subjects experimental design was employed. The completion of three academic contracts per week entitled the subjects to receive a contract consequence which the parents delivered. The parents determined contract completion based on specified criteria. Academic performance was measured by grades the subjects received on homework, tests, and spelling quizzes. There was negligible improvement in the three subjects' academic performance after the contracting procedure was introduced; however, one must take into consideration the fact that a number of problems were present in the study.
ACKNOWLEDGEMENTS

The author wishes to express her sincere appreciation to Dr. Bill Redmon for his patient guidance throughout this specialist project. The author also wishes to express her gratitude to the teachers and administrators at Schoolcraft Public High School, Schoolcraft, Michigan.

Carolyn Marie Nock
INFORMATION TO USERS

This reproduction was made from a copy of a document sent to us for microfilming. While the most advanced technology has been used to photograph and reproduce this document, the quality of the reproduction is heavily dependent upon the quality of the material submitted.

The following explanation of techniques is provided to help clarify markings or notations which may appear on this reproduction.

1. The sign or “target” for pages apparently lacking from the document photographed is “Missing Page(s)”. If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting through an image and duplicating adjacent pages to assure complete continuity.

2. When an image on the film is obliterated with a round black mark, it is an indication of either blurred copy because of movement during exposure, duplicate copy, or copyrighted materials that should not have been filmed. For blurred pages, a good image of the page can be found in the adjacent frame. If copyrighted materials were deleted, a target note will appear listing the pages in the adjacent frame.

3. When a map, drawing or chart, etc., is part of the material being photographed, a definite method of “sectioning” the material has been followed. It is customary to begin filming at the upper left hand corner of a large sheet and to continue from left to right in equal sections with small overlaps. If necessary, sectioning is continued again—beginning below the first row and continuing on until complete.

4. For illustrations that cannot be satisfactorily reproduced by xerographic means, photographic prints can be purchased at additional cost and inserted into your xerographic copy. These prints are available upon request from the Dissertations Customer Services Department.

5. Some pages in any document may have indistinct print. In all cases the best available copy has been filmed.
NOCK, CAROLYN MARIE

EFFECTS OF CONTINGENCY CONTRACTING ON THE ACADEMIC PERFORMANCE OF SPECIAL EDUCATION STUDENTS

WESTERN MICHIGAN UNIVERSITY

ED.S. 1982
# TABLE OF CONTENTS

ACKNOWLEDGEMENTS ................................................. ii
LIST OF FIGURES .................................................. iv
LIST OF TABLES ..................................................... v

Chapter

I. INTRODUCTION ............................................... 1
II. METHOD ....................................................... 11
   Setting and Subjects ........................................... 11
   Experimental Variables and Design .......................... 11
III. RESULTS .................................................. 17
IV. DISCUSSION ............................................... 26
<table>
<thead>
<tr>
<th>FIGURE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Home-school contract</td>
<td>12</td>
</tr>
<tr>
<td>2. Percent of homework assignments completed before and after contracting (—equals (X) mean performance)</td>
<td>18</td>
</tr>
<tr>
<td>3. Test grades in percent before and after contracting (—equals (X) mean performance)</td>
<td>20</td>
</tr>
<tr>
<td>4. Spelling grades in percent before and after contracting (—equals (X) mean performance)</td>
<td>23</td>
</tr>
</tbody>
</table>
LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Means and standard deviations by academic category for baseline and intervention phases</td>
<td>25</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

This study investigated the effects of parent-child contracting on academic performance with special education students enrolled in mainstream classes. The enactment of Public Law 94-142 required public schools to provide all students with a type of education appropriate to their needs. This legislation also specified that educators provide students with instruction in the least restrictive environment.

As a result of this law, school systems have developed resource rooms where students with special education needs may be instructed in the most beneficial manner. These special-needs students receive the individualized instruction necessary for them to succeed in school.

The low teacher-student ratio in resource rooms enables students to receive one-to-one instruction in a variety of subjects, but with the major emphasis being placed on basic reading and math skills. Since the classroom teacher is dealing with a small number of students, he/she has the time to construct individualized programs to suit each student's special needs.

Once it has been determined by a multidisciplinary team that the student has received maximal benefits from the resource room and is capable of functioning in a less restrictive environment, the student is transferred into a regular education classroom. This transfer process, known as mainstreaming, is the specification of Public Law 94-142 that the student be instructed in the least restrictive environment.
While the practice of mainstreaming is justified on legal, ethical, and logical grounds, it does pose a number of problems that must be addressed if it is to be successful. One of the foremost problems encountered with mainstreaming is the difficulty both students and teachers experience in the transition from special to regular education (Yates, 1973). This process is a critical period for the special-needs student, as he/she is expected to perform with much less individualized instruction from the regular education teacher. In order to meet handicapped students' needs, the regular education teacher must be willing to modify his/her instructional practices (Palmer, 1980). This transition is also characterized by a considerable reduction in communication between the student's special and regular education teachers. Educational technologies must be developed and provided if there are to be successful transitions from special to regular education programs.

One approach which holds considerable promise in training students to function independently of special education is contingency contracting. The use of contracting with mainstream students has several advantages. First of all, such a procedure extends a middle level of support to the special education student. It provides the student with additional help from the mainstream teacher in the critical transition period between special and regular education. In addition, contracting can enlist support from the parents at a time when the student needs it.

Secondly, contingency contracting may teach self-management skills to the mainstream student. The student could then apply these skills to behaviors other than academic work, such as social behaviors. The student learns how to arrange and manipulate environmental contingencies
in order to increase the chance of the desired behavior occurring and the consequence being received.

And finally, contingency contracting may increase the chance of the student working independently, without a great deal of support from the special education teacher. Successful contract completion and a resulting increase in grades may demonstrate to the special education student that he/she can function adequately in a regular education setting.

Contingency contracts have been used successfully to alter a wide variety of behavior problems with numerous subject populations. This procedure has been shown to be effective in treating such problems as overeating, alcohol and drug abuse, cigarette smoking, problem behaviors of delinquents, and marital discord (Argona, Cassady, & Drabman, 1975; Miller, 1972; Spring, Sipich, Trimble, & Goeckner, 1978; Stuart & Lott, 1972; Stuart, 1969).

Ideally, contingency contracts contain five elements (Stuart, 1972). First, contracts should detail the privileges each party expects to gain from the contract. Second, the behaviors of the client must be readily observable. Third, the contract contains sanctions for failure to meet the terms. Fourth, a contract can provide a bonus clause which reinforces consistent compliance with the contract. Fifth, a contract should provide a means of monitoring the rate of positive reinforcement.

There are several distinct advantages in using contingency contracts. First, when clients are allowed to have some input into designing or implementing the contract program, their performance may be better than if the program is imposed upon them (Lovitt & Curtis,
Second, the contingencies specified in the contract are less likely to be aversive to the client. The client can negotiate the consequences and the requirements for reinforcement. Third, contingency contracts are usually flexible, in that participants can renegotiate the terms to make revisions (Stuart & Lott, 1972). Fourth, the contract makes the contingencies explicit. By specifying the contingencies in written form, the client is fully informed as to what behavior is required and what the consequences of this behavior are.

Homme (1966) was the first researcher to use the term contingency contract. He used contracts with adolescents who were potential drop-outs, to specify how existing reinforcers could be earned by completing academic assignments. Contingency contracting is not, however, an innovation of recent times. In 1922, the Dalton plan utilized contracts as a means of individualizing students' daily classroom assignments. In the Dalton plan, students receive a monthly allotment of academic assignments to complete. It is the student's choice as to which academic subject he/she will work on in any particular day. Each assignment is corrected by the teacher and is then marked off in the teacher's record book (Parkhurst, 1922).

Contracts between teachers and students typically specify a time frame, the exact tasks required, and the consequences if the tasks are or are not complete (DeRisi & Butz, 1975). The relationship between the task and the consequence, whether it be a grade or a privilege, is specified on the contract and signed by both teacher and student. Although contract formats may vary according to the situation or population concerned, contracts are written in the form, "If you do X, you will get Y" (Homme, Csayni, Gonzales, & Rechs, 1969).
Contingency contracting has proven effective in improving both social and academic behaviors in classroom settings with both regular and special education students. Utilizing undergraduate psychology students as subjects, Bristol and Sloane (1974) demonstrated that contingency contracting significantly increased the study rate of students enrolled in an introductory psychology class, with a wide range of abilities. Students were required to sign a contract specifying that on five selected days a week, he/she would study Introductory Psychology for the amount of time that would be specified by "task cards" given to him/her periodically. For each task card completed, the subject received one dollar. This contracting procedure proved to be selectively effective in improving the test performance of below-average students. In addition, the authors found that study rate gains in contracted courses did not generalize to noncontracted courses.

In a study conducted by Williams and Anandam (1973), grades attained by disadvantaged junior high school students under contract were compared with those obtained by similar students not under contract. Under the contracting system, students could earn daily points for appropriate academic and social behavior. The authors found that grades of students under contract increased the semester the contract was applied, whereas the grades of a similar group declined slightly.

A recent study by DiSilvestro and Markowitz (1982) examined the effect contracts had on completion rates in a correspondence study course. A study contract was offered to randomly assigned experimental groups at both the university and high school levels; noncontract control groups were formed for comparison. The authors found that students...
were motivated by contracts to begin course work promptly, but persistence to course completion was not strongly influenced. The researchers concluded that the use of contracts has significant value in stimulating the timely submission of an initial lesson.

Jenkins and Gorrafa (1972) examined the effects of a token economy plus superimposed contracts on the reading and arithmetic performances of emotionally impaired children. In week one of the study, the children earned and spent tokens for academic and socially appropriate behaviors. Week two was the first superimposed contract week. In this and subsequent superimposed contract weeks, children continued to earn and spend tokens as they had in a regular token week. In addition, however, they negotiated an individual contract with the teacher which stated the amount of reading and arithmetic they must perform to earn an extra privilege. The authors found that reading and arithmetic performances were highest when the token economy was combined with a superimposed contract. Performance was lowest when neither the token economy nor the combination of tokens and contracts was in effect.

While contingency contracts have proven successful in improving both academic and social behaviors, it is not entirely clear why they are effective. One popular view is that a contract brings structure and consistency to the classroom environment, thus allowing students to know what is expected of them and what they can expect from the teacher. Since expectations can be clearly specified without having the student involved, the question remains whether mutual planning is really essential for producing desired academic and social behavior.

A partial answer to this question was supplied by two studies
(Sapp, 1971; Williams, Long, & Yoakley, 1972) which compared behavior contracts and behavior proclamations (a plan that offers the structure and precise organization of a contract without involving the students in the development or endorsement of the plan). Sapp (1971) compared the effects of contracting and proclamations in a predominantly black inner city school. He demonstrated that levels of appropriate social behavior could be increased and maintained equally well with either a behavior proclamation or behavior contract. The Williams et al. (1972) study revealed that contracting was more beneficial than a proclamation for improving appropriate social behaviors with advantaged students in a private school. A more recent study conducted by Arwood, Williams, and Long (1974) with ninth grade English students found that contracting, when compared to a behavior proclamation, was more effective in improving academic achievement and social conduct of students.

One form of contracting consists of the involvement of significant persons in the lives of the "targets" of intervention. These "natural mediators," such as parents, spouses and friends, have been demonstrated to enhance the success of the contracts as well as being both effective and efficient (MacDonald, Gallimore, & MacDonald, 1970; Tharp & Wetzel, 1969).

In the MacDonald et al. (1970) study, a contracting procedure was used to effectively increase the school attendance of chronic non-attenders. Absenteeism was 70 percent for students participating in one of the projects. The high rate of absenteeism was reduced by having individuals important in the life of the students (e.g., relatives, mother of a girlfriend) make "deals" with the students by contingently
administering individualized reinforcers (e.g., access to family car, weekend privileges, time with a girlfriend) for attending school. Attendance improved in a seven-week period. When the deals were discontinued and later reinstated, attendance decreased and improved, respectively, indicating that the contracts controlled absenteeism.

The utilization of parents, in particular, as "natural mediators," has several advantages (DeRisi & Butz, 1975; Tharp & Wetzel, 1969). First, the parents are in daily contact with their children, which allows contracting to occur on a daily basis. Second, the parents are in the position to know, from past history, what things could most likely serve as backup reinforcers in contract negotiations. And finally, by having the parents involved with their children by way of a contract, the parents may become proficient at defining tasks that may, in the future, facilitate improved behavior management of children by their parents (Tharp & Wetzel, 1969).

Contingency contracting between parent and child has proven successful in such areas as weight reduction, increasing appropriate classroom behavior, and improving academic performance (Argona et al., 1975; Cohen, Keyworth, Kleiner, & Libert, 1972; Sluyter & Hopkins, 1972). In the Cohen et al. (1975) study, a contingency contracting program was successfully used to improve both academic and social behaviors of adolescents described as having academic and social deficits. Contracts were mutually negotiated between students, parents, and the school staff, and these were then in effect for two-week periods. The students received check marks on a card from the school staff for appropriate social and academic behavior. The
students then brought these check sheets home to their parents, who were responsible for delivering the contract reinforcer if the student had earned a specified number of check marks.

Bristol (1976) used a contingency contracting procedure to alter the behavior of a child who constantly displayed aggressive behavior at school. The contract program involved both the teacher, the parents, and the child. The subject received a card from his teacher each morning with a smiling face on it. At morning, lunch, and the end of the day, the teacher signed the card if the subject had not engaged in fighting, as specified in the contract. The teacher's signature served as points: each signature could be accumulated toward the purchase of a reward, as also specified in the contract. Parents provided praise and gave extra privileges for the signatures the subject received.

During baseline, the subject averaged nine fights a week. Fights were reduced during the contracting procedure and returned when the contract procedure was withdrawn. In the final phase, fights again were reduced and eliminated for the last three weeks of the program.

One of the foremost studies to demonstrate the effectiveness of using parents and/or teachers as change agents in contracting procedures was conducted by Cantrell, Cantrell, Huddleston, and Woolridge (1970). Cantrell et al. (1970) successfully used written contracts in a public school setting in managing school problems ranging from hyperactivity, stealing, and underachievement to school phobia. Parents and/or teachers administered the reinforcers (i.e., outdoor time, driving privileges, money) contingent upon the completion of designated performances.
The present study was designed to investigate the effects of parent-child contracting on academic performance with special education students enrolled in mainstream classes. The study examines the effectiveness of contingency contracting with social and activity reinforcers being delivered to the students by their parents for achieving a preset criteria of academic performance each week.
CHAPTER II

METHOD

Setting and Subjects

The study took place at a rural high school, grades nine through twelve, with a student population of 313. Three female subjects were selected on the basis of teacher recommendations of students in need of extra academic help. Subject One was 16 years old; Subject Two, 14 years old; and Subject Three, 15 years old. Within the year prior to the study, these three girls had been identified as needing special education services. Subjects One and Three were certified as emotionally impaired, and Subject Two was certified as learning disabled. For the majority of the school day, the subjects were instructed in the resource room by the special education teacher; however, for one class period each day, they were mainstreamed into a regular ninth-grade English class.

Experimental Variables and Design

The independent variable of the study consisted of a written contract (see Figure 1) between each subject, the mainstream English teacher, and the subject's parents. This contract specified a task to be performed by the subject, the criteria for completion of the task, and the consequences for task completion.

The dependent variables consisted of the subject's average weekly English grades, which were determined by the English teacher, and the
HOME-SCHOOL CONTRACT

Today's date____________________

Date due____________________

TASK 1
DESCRIPTION: RESULTS (Please circle)
COMPLETE/INCOMPLETE

CRITERION:

TASK 2
DESCRIPTION: COMPLETE/INCOMPLETE

CRITERION:

Teacher's signature____________________

Student's signature____________________

IF COMPLETE, THIS CONTRACT IS WORTH 10 POINTS OUT OF A POSSIBLE 30 POINTS THAT ARE NEEDED THIS WEEK IF I WILL BE ABLE TO EARN THE FOLLOWING:

Parent's signature____________________
percentage of contracted tasks completed each week. The weekly English grades were derived from grades received on weekly tests, spelling quizzes, and daily homework assignments and were collected from the teacher's record book.

A multiple-baseline across-subjects experimental design (Bailey, Wolf, & Risley, 1968) was employed in this study. This design allows the effect of an intervention to be demonstrated by showing changes across separate individuals when and only when an intervention is introduced.

Procedure

The subjects received three contracts per week to complete for the experimenter. The experimenter provided the subjects with the contracts at the beginning of the week and collected them on the day they were due. The contract forms were filled in by the subjects, based on the academic tasks the English teacher verbally assigned in class.

The subjects received instructions from the experimenter in how to write the academic tasks assigned in behavioral and objective format, i.e., "given X, subject will do Y to criteria Z." The subjects were shown examples of contracts with the task and criteria specified. The academic tasks assigned by the teacher consisted of written homework assignments and studying for the weekly tests and spelling quizzes. After specifying the task and criteria on the contract form and signing their names, the subjects brought the contracts to the teacher so that they could be checked for accuracy. The teacher then signed her name,
which indicated that the contract had been filled out correctly. In
addition to the teacher checking the contract for completeness, during
the initial three weeks of the contract phase, the experimenter reviewed
each subject's contract for accuracy.

The subjects then took the contracts home with them to complete.
The parents were responsible for determining whether or not the contract
was complete according to the criteria specified. This determination
consisted of reviewing homework assignments written by the subjects to
ensure that the quantity of questions answered corresponded to that
specified on the contract form and also to orally ask the subjects
questions found at the end of each textbook chapter or to orally quiz
the subjects on the words for their weekly spelling quizzes. After
determining whether or not the contract met criteria, the parents
signed their names and returned the contract to the subject, who in
turn brought it back to school the following day.

The consequences for successful contract completion on a weekly
basis were specified on the contract form. These consequences, which
were determined through discussions with the experimenter, the parents,
and the subjects, consisted of such things as having a friend over,
going to a special event, or engaging in some type of activity. For
Subject Three, the consequence chosen through mutual agreement was for
the subject to work in the art classroom on Friday during study hall
period.

For each contract completed, subjects received ten points, which
were then applied to their desired consequence. If thirty points were
earned in a week, the subject received the consequence on the day
previously agreed upon.
Weekly data were collected each Friday by obtaining the subjects' grades from the English teacher. The number of contracted tasks were recorded as the contracts were handed in to the experimenter by the subjects.

The English grades that the subjects received from the English teacher were objective-based, which involved counting answers as correct or incorrect; therefore, no reliability measures were taken of the English grades the subjects received.

The reliability on delivery of consequences by parents was based on the subjects' verbal reports only; therefore, no formal reliability for consequences was obtained.
CHAPTER III

RESULTS

Figure 2 shows the percent of homework completed for the baseline and contract conditions. During the last three school weeks of the intervention phase, each subject obtained a 100% homework completion score. Although this represented a change from previous performance during baseline, it must be noted that an artifact is present in these data. Subject Three was under the contract condition only during the last three school weeks.

For Subject Two, homework completion rose to an average of 90% after contracting was implemented, as compared to a 69% average before contracting; however, this 90% is somewhat inflated by the perfect performance of Subject Two in the last three school weeks. Likewise, the 58% average Subject One obtained under the contract phase compared to a 50% average before contracting is attributed to the inflation of 100% performance obtained during the last three intervention school weeks.

The weekly test grades, in percentages, for the three subjects before and after contracting are presented in Figure 3. Subjects One and Two showed minimal and negligible improvement, respectively, during the contract phase as compared to test performance during baseline. The test scores for Subject One increased from an average of 48% during baseline to 58% during the contract phase. It should be noted, however, that this minimal improvement in mean scores for
Figure 2. Percent of homework assignments completed before and after contracting (--- equals (X) mean performance).
Figure 3. Test grades in percent before and after contracting (--- equals (X) mean performance)
Subject One is due to spuriously inflated baseline scores obtained by the subject. Subject Two obtained a mean test performance of 60% during intervention as compared to 57% under baseline conditions. The mean intervention test performance of Subject Three was 74% compared to 69% during baseline, which represents a small decrease.

Shown in Figure 4 are the spelling quiz scores for all subjects before and after contracting. Subject One, with a 39 mean percent spelling score during baseline, improved to a mean percent of 52 after intervention. Subject Two obtained a mean spelling quiz score of 42% during baseline and a 40% mean score during the contracting phase. A 57% mean spelling score for the baseline condition and a 47% mean score after contracting was introduced were obtained by Subject Three.

Table 1 presents the means and standard deviations for all subjects in the three academic categories for baseline and contracting conditions. An inspection of this table reveals that, on the average, the variability in performance decreased as academic performance increased under the contract condition. This increase in performance consistency is especially seen in the case of Subject Three, where variability decreased in all three academic categories. The largest decrease in variability is seen in the homework assignment category for Subject Three, in which the standard deviation decreased from 32 during baseline to zero under the contract phase; however, only three weeks of data were collected. Lower intervention standard deviations are seen in the categories test and spelling for Subject One and in the categories homework and spelling for Subject Two.
Figure 4. Spelling grades in percent before and after contracting (--- equals (X) mean performance)

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
SPELLING GRADES (PERCENT)

BASELINE

CONTRACTING

SUBJECT 1

SUBJECT 2

SUBJECT 3

SUCCESSION SCHOOL WEEKS

Reproduced with permission of the copyright owner. Further reproduction prohibited without permission.
Table 1
Means (X) and Standard Deviations (S.D.) for All Subjects
by Academic Category
for Baseline and Intervention Phases

<table>
<thead>
<tr>
<th>Phase</th>
<th>Baseline</th>
<th></th>
<th>Intervention</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>S.D.</td>
<td>X</td>
<td>S.D.</td>
</tr>
<tr>
<td>Baseline</td>
<td></td>
<td></td>
<td>Intervention</td>
<td></td>
</tr>
<tr>
<td>Homework</td>
<td>61</td>
<td>35</td>
<td>69</td>
<td>37</td>
</tr>
<tr>
<td>Test</td>
<td>48</td>
<td>32</td>
<td>58</td>
<td>22</td>
</tr>
<tr>
<td>Spelling</td>
<td>39</td>
<td>24</td>
<td>52</td>
<td>23</td>
</tr>
<tr>
<td>n = 7</td>
<td></td>
<td></td>
<td>n = 8</td>
<td></td>
</tr>
<tr>
<td>Subject 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homework</td>
<td>69</td>
<td>33</td>
<td>90</td>
<td>15</td>
</tr>
<tr>
<td>Test</td>
<td>57</td>
<td>19</td>
<td>60</td>
<td>21</td>
</tr>
<tr>
<td>Spelling</td>
<td>42</td>
<td>25</td>
<td>40</td>
<td>13</td>
</tr>
<tr>
<td>n = 9</td>
<td></td>
<td></td>
<td>n = 6</td>
<td></td>
</tr>
<tr>
<td>Subject 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Homework</td>
<td>65</td>
<td>32</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Test</td>
<td>74</td>
<td>14</td>
<td>69</td>
<td>6</td>
</tr>
<tr>
<td>Spelling</td>
<td>57</td>
<td>27</td>
<td>47</td>
<td>8</td>
</tr>
<tr>
<td>n = 12</td>
<td></td>
<td></td>
<td>n = 3</td>
<td></td>
</tr>
</tbody>
</table>

n = number of school weeks for which data were collected.
CHAPTER IV

DISCUSSION

The current study did not demonstrate that contracting was effective in improving the academic performance of special education students enrolled in mainstream classes. During the contracting phase of the category for homework completed, there appeared to be a confounding variable in the percent of homework completed which spuriously inflated differences between baseline and experimental conditions. Moreover, when the artifactual data were deleted from the analysis, the experimental effects disappeared.

In the academic categories of test grades and spelling quiz scores, not all subjects were equally responsive to the intervention of contingency contracting, and what effects in academic performance that were seen appeared quite minimal. In the academic category of test grades, the performance of Subject One was minimally improved after contracting, whereas the performance of Subject Three decreased slightly. Differences in subjects' responsiveness to the contracting procedure are also seen in the spelling quiz category, in which the performance of Subject One increased after contracting, but the performances of Subjects Two and Three decreased after intervention.

In the results of the present study, a great deal of variability is found in the grades the subjects received before and after the contracting phase was implemented. This variability is especially noticeable in the homework completion scores obtained by the subjects. In
Figure 2, it appears as if the mean lines shown in the contracting phase indicate improvement in homework completion; however, if one were to exclude the spuriously high and low scores obtained by the subjects during baseline, the improvement noted between the two phases would decrease.

Prior to the last three weeks of the contracting phase, in which all subjects obtained 100% homework completion scores, the scores of the subjects were quite variable. In the case of Subjects One and Two, different contract consequences were negotiated during these last three weeks. The contract consequence initially chosen by Subject One consisted of spending the weekend at her aunt's house, whereas during the last three weeks the subject chose to remain after school with the Home Economics teacher where she was allowed to cook. For Subject Two, the contract consequence changed from attending church functions on the weekend to having a friend stay overnight on Fridays. With Subject Three, however, there was no change in consequence, but Subject Three also had 100% homework scores for all three weeks.

While the change in contracting consequences is one possible explanation for the inflation of homework completion scores, it is also possible that some other variable is operating. A possible speculation as to the nature of this confounding variable is that the last three intervention weeks were also the last three weeks of school before the end of the year and just prior to the start of Christmas vacation. It is possible that the assignments handed out by the teacher during this time period were less demanding in nature than previous ones. Support for this speculation is derived from a conversation between the teacher...
and the experimenter in which the teacher stated she tends to decrease the amount of work required of her students because of their preoccupation with the holidays.

In reviewing the homework scores obtained by Subject One in the contracting phase, a decrease of scores is noted for weeks 9, 10, and 11. The subject reported to the experimenter that during these three weeks, her mother had now allowed her to engage in the chosen activity reinforcer agreed upon because of misbehavior by the subject in the home. It is thus speculated that this decrease in homework completion may have been due to the parent not allowing the subject to receive the reinforcing consequence.

This observation brings up the issue of attempting to take all steps necessary to ensure that the parents carry through with their part of the contract agreement. The parents must understand that the terms of the contract must be adhered to, independent of the child's behavior in areas not specified in the contract. Communication between the parents and the experimenter on a weekly basis may help to decrease such occurrences.

A decrease in homework completion in weeks two and three of intervention is also seen with Subject Two. The subject reported that the initial consequences she had chosen for these two weeks were not the ones that her parents would agree to; therefore, other consequences had to be chosen. Although the subject did finally accept these consequences, she was still disappointed that she could not receive her initially chosen consequences. It was also reported by the subject's parents that this disagreement created some conflict between the
parents and the subject. In view of this conflict situation, a possible explanation for the subject's homework completion decrease may be that the consequences finally chosen by the subject were not of a sufficient reinforcing nature to ensure contract compliances.

This incident brings up the issue of the difficulty one encounters when contract negotiations are made between parent and child. Consequences that parents feel are appropriate are not always ones that the child desires. A possible way to alleviate such a problem in the future may be to have the parent and the child draw up lists of possible consequences before contracting is implemented, and then coordinate between the two parties to delete consequences that parents will not agree to. In this way, the child will know beforehand which consequences will not be deemed appropriate, which may avoid conflicts on a weekly basis when the consequence for the week is chosen.

In the case of Subjects Two and Three, during the last three school weeks, homework was completed 100% of the time. At the same time, the spelling scores of both subjects and the test scores of Subject Three decreased during these last three weeks. An additional explanation for these score decreases is that the behavior required of the subjects on homework assignments is not similar to behavior required from them on a test or spelling quiz. The fact that Subject Three had a 100% homework completion score supports the idea that even though assignments are completed on a regular basis, a student may still fail to do well on a weekly test. If homework is to be assigned by the teacher, efforts on the teacher's part must be made to ensure that homework content is related to material a student is expected to know to be successful on a test or spelling quiz.
A multiple-baseline across-subjects format was the experimental design utilized with the present study. This type of design was chosen because it allows the demonstration of the effect of an intervention by showing changes across separate individuals at separate times, when and only when an intervention is introduced. There are, however, limitations to this design. One such limitation, as described by Kazdin and Kopel (1975), is that changes due to extraneous or uncontrolled factors are evident in generalized changes across all baselines. One possible way to eliminate this is to introduce a temporary "reversal" for one of the subjects to determine the role of possible extraneous variables on dependent measures (Kazdin & Kopel, 1975). A reversal condition, i.e., back to baseline conditions, utilized with the present study may have added additional information regarding the subjects' performance which would have helped in interpreting the results of the current study.

Limitations of the present study include the lack of data to assess whether or not the contract consequences were delivered or not other than through verbal reports of the subjects. Additional contact with the parents through written notes or telephone conversation may help to ensure the parents' compliance with delivery of contract consequences. Another similar limitation is that delivery of the consequences depended mainly on the parents, whereas the earning of the consequence depended on contract completion. When several parties are involved in contracting, the probability of one party not carrying through with the agreement may increase. Future studies in contracting may want to consider the possibility of utilizing consequences that
can be readily delivered in a school setting by the classroom teacher, in addition to consequences delivered at home by the parents.

In summary, the present study did not demonstrate that contingency contracting is effective in improving the academic performance of special education students enrolled in mainstream classes. The presence of confounding variables in each of the academic categories makes it impossible to conclude what, if any, experimental effects were present. One should not, however, conclude on the basis of this study that behavioral contracting as a procedure is not an effective intervention technique in improving the academic performance of special education students. The problems inherent in the present study are not representative of those found in all contracting procedures.
BIBLIOGRAPHY


Argona, J., Cassady, J., & Drabman, R.S. Treating overweight through parental training and contingency contracting. Journal of Applied Behavior Analysis, 1975, 8, 269-278.

Arwood, B., Williams, R., & Long, J. The effects of behavior contracts and behavior proclamations on social conduct and academic achievement in a ninth grade English class. Adolescence, 1974, 9, 423-436.


