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The Effects of In-School and Out-of-School Contracting on Academic Performance

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THE EFFECTS OF IN-SCHOOL AND OUT-OF-SCHOOL CONTRACTING ON ACADEMIC PERFORMANCE

by

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THE EFFECTS OF IN-SCHOOL AND OUT-OF-SCHOOL CONTRACTING ON ACADEMIC PERFORMANCE

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While in-school contracting has repeatedly been shown to be useful in improving academic achievement and social conduct, out-of-school contracting also holds promise in the area of student behavior change. The purpose of the present study was to transfer the control of an in-school contracting procedure outside the school and into the home with low achieving middle school students. The experimenter added an out-of-school contracting procedure to an in-school contracting program already in operation. The effect of the intervention was assessed in terms of weekly grades, six-week grades, the percent of weekly assignments completed, and the percent of contracts completed per week.

Experiment I employed a multiple-baseline design across two classes for three students. Experiment II employed a multiple-baseline design across four students involving one class. In both experiments, the mean weekly grades increased from 5 to 11 percentage points following the introduction of out-of-school contracting in combination with in-school contracting. The results from both experiments indicate an increase in six-week grades for at least one class for six of the seven students. It appears that an increase in contracting increased the number of assignments completed and the amount of work turned in and led to an increase in the accuracy of the assignments completed.

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In addition, I would like to thank my friends and all those movie makers who helped me come up smiling. I would like to dedicate this work to my parents in thanks for a lifetime of love, friendship, patience and memories.

On a final note, I would like to acknowledge my favorite quote from one of Joseph Heller's books:

"While a great deal of what we do is unimportant,
it is important that we do a great deal of it."

Kelly Lynn Kent

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CHAPTER I

INTRODUCTION

Contingency contracting is a technique that can be used to structure behavior so that the tasks involved and the criteria for evaluation are so clear and explicit that they can be written into an agreement that is both understandable and acceptable to each party involved (Kazdin, 1975). Previous studies demonstrate that contingency contracting holds great promise in the area of behavior change and in the never ending search to find helpful techniques to increase student interest and effort in learning (Wilson and Gambrell, 1975). An advantage of contracting is that it can be used at any grade level with a variety of populations (Polzynski, 1977). It has been successfully applied with normal children in regular public school classrooms (White-Blackburn, Semb, and Semb, 1977), with children suffering from severe emotional disturbances (Balaschock and Mastofsky, 1980), by parents within their own families (in the home) (Cohen, Keyworth, Kliener, and Libert, 1971), and in many other situations (Homme, Csanyia, Gonzales, and Rechs, 1969). Cantrell, Cantrell, Huddleston and Wooldridge (1969) successfully used contract procedures with behaviors ranging from school runaway behavior, school non-attendance, hyper-aggressivity, and stealing to academic underachievement. Williams, Long and Yoakley (1972) demonstrated that contracts increased the level of appropriate behavior among high-achieving academically-oriented students. Arwood, Williams and Long

(1974) found that contracts led to increased rates of appropriate behavior by students in a ninth-grade English class. More recently, White-Blackburn et al., (1977) found that contracts successfully increased on-task behavior, daily task assignment completion, and weekly grades of 6th grade students in a public school classroom.

The major contribution of the contract strategy with student subjects appears to be in the functioning personal relationship between the parties involved -- the contract manager and the individual student. Contracting not only maximizes student involvement, but also student participation and motivation (Wilson and Gambrell, 1975). According to Homme et al., (1969), an underlying principle of contracting is that children learn more willingly and satisfactorily if the framework within which learning takes place has been mutually agreed upon between teacher and student. Results of previous contract studies support the position that students attain higher rates of appropriate behavior when given the opportunity to assist in classroom management (Cantrell et al., 1972; Brigham and Amith, 1973; Arwood et al., 1974). Contracting techniques bring structure and consistency to the classroom environment by specifying the contingencies on paper. Involving students in the formation of contingencies will not necessarily change the nature of those contingencies, but it appears to enhance the reinforcement value of operating under those contingencies (Arwood et al., 1974).

While in-school contracting has repeatedly been shown to be useful in improving academic achievement and social conduct (Clark,

1978), out-of-school contracting also holds great promise in the area of student behavior change. Cohen et al., (1971) used an out-of-school or "home" contract between parents and students using home-based reinforcement to support school behaviors. The home contracting procedure was not only effective, but it was also efficient. Minimal involvement between the contract manager and the parent(s), teacher(s), and student was utilized to bring about a systematic behavior change. In another home-contracting study, MacDonald, Gallimore and MacDonald (1970) employed school personnel to manage "natural" mediators in arranging contingency contracts with students for school attendance. The study demonstrated how the involvement of significant persons in the lives of the "targets" of intervention often enhances the success of contingency management programs.

The present study provides a test of a home-contracting procedure. The purpose of the study was to transfer the control of an in-school contracting procedure outside the school and into the home. The experimenter in the present study administered a combination of both in-school and out-of-school performance contracting procedures for academic work and analyzed their effect on weekly grades, the percent of weekly assignments completed, and the percent of contracts completed.

Project Description

In-school contracting procedures were in use in the school prior to the initiation of the present study, during which baseline data

were collected. In-school contracting took place within the "Guided Study Center". The Guided Study Center (GSC) was a part of a project originally started to provide assistance to students with academic work in a high school.

In general, the GSC provides a structured setting for students to work on academic assignments on a contractual basis. Upon entering the center, a contract is written for each student. The contract includes a clear specification of the type and amount of work to be accomplished and the time allowed to complete it. The amount of work to be finished is negotiated by the student and a staff member before the contract form is filled in. Students and a staff member complete the contract form and agree to the conditions by signing the document. Performance progress is monitored and assistance is provided by GSC staff members. When the work is complete or time expires, a staff member reviews the product of the work in terms of the criterion stated in the contract.

On the lower portion of each contract the behaviors necessary for continued use of the center (called Review Information) are specified in writing (see Fig. 1). Students are shown the list of behaviors and reminded that they must adhere to the requirements. Review Information is completed for every student that uses the center.

The GSC is designed to be used by students during study hall or within a scheduled class period. Students may request to use the center or be referred to the center by a teacher. Following the work period, the teacher who authorized the student's use of the center is

informed of the results of the student's work by a carbon copy of the contract form.

Figure 1. Contract used for in-school contracting within the Guided Study Center during Baseline II.

GUIDED STUDY CONTRACT

TIME_____

DATE_____

IN THE NEXT_____MINUTES, I WILL ACCOMPLISH THE FOLLOWING TASK(S):

TASK 1 RESULTS
DESCRIPTION:

COMPLETE

CRITERION: INCOMPLETE

TASK 2 RESULTS
DESCRIPTION:

COMPLETE

CRITERION: INCOMPLETE

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

	Circle One	
1. Obtained a pass and had it signed by teacher.	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 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 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_____

The GSC is staffed by high school students, 8th grade students, and one adult (the center manager). At the time of this project, the author was a coordinator of the GSC and one of the two center managers. Staff members were trained by the center managers and received training in four areas: 1. Writing the contract; 2. Helping with study-skill problems; 3. Completing Review Information; and 4. Providing descriptive feedback on work completed.

The center is open five days a week for 7 hours on Monday, Wednesday, and Friday and for the first 4 hours on Tuesday and Thursday mornings. A contract is written for no more than one hour and no less than 10 minutes.

The contract forms used in the GSC and during intervention (see Fig. 1 and Fig. 2) are not typical contingency contracts. The most important distinguishing characteristic for each is that the statement of consequences for completed work is non-specific. "Complete" or "incomplete" was simply circled on either contract if the amount of work completed met the criterion stated on the contract. Although classroom teachers could apply consequences (e.g., points, grades, etc.) contingent on work completion, no such conditions are required in the GSC or with the out-of-school contracting procedure. Teacher-controlled consequences are not referred to in the contracts.

Figure 2. Contract used with each student for out-of-school contracting during Intervention.

OUT-OF-SCHOOL CONTRACT FORM

NAME_____
DAY _____
DATE_____

CLASS	TASK: DESCRIPTION	CRITERION:	DATE DUE:	RESULTS:
	IN THE FOLLOWING ___MINUTES, I WILL FINISH THE FOLLOWING TASK:			
				COMPLETE INCOMPLETE STUDENT SIG_____ MANAGER_____
CLASS	TASK: DESCRIPTION	CRITERION:	DATE DUE:	RESULTS:
	IN THE FOLLOWING___MINUTES, I WILL FINISH THE FOLLOWING TASK:			
				COMPLETE INCOMPLETE STUDENT SIG_____ MANAGER_____

CHAPTER II

METHOD

Experiment I

Subjects

The subjects for Experiment I were three female students attending the Schoolcraft Middle School. Criteria for subject selection were based on three variables:

(1) Grade performance level low enough to show significant change (at "D" or "E" level).

(2) Previous and current attendance to the Guided Study Center (attended the center at least three times a week over the previous six-week period).

(3) School attendance record showed no more than two absences for the previous six-week marking period.

Subject A was a female 7th grader who spent part of the day in a resource room for English, math, and science and the other part of the day in the regular education classroom for reading and geography. Subject A had previously been labeled "Learning Disabled" and had a history of absenteeism and low achievement. Subjects B and C were female 8th graders attending all regular education classes and also had a history of low achievement. All three students frequently did not turn assignments in on time or at all.

Dependent Variables

The dependent variables were the percent of contracts completed, the percent of assignments completed each week, the average weekly grades obtained in the target classes, and the final six-week grade.

Independent Variable

The independent variable was the application of two different contracts for both in-school and out-of-school completion of assignments (refer to Fig. 1 and 2). Both kinds of contracts listed the specific assignment(s) to be worked on for that hour (in-school) or for that night (out-of-school), the amount of work to be completed for each assignment and the approximate amount of time it would take to complete each assignment. Consequences for each assignment-contract involved a daily review of the assignments described in the contract and evaluating the work as "complete" or "incomplete" for each specified assignment.

Experimental Design

Experiment I employed a multiple-baseline design across two classes involving three student subjects. Prior to introducing the out-of-school contracting procedure, the experimenter obtained and recorded two types of baseline data, the students' six-week grades and the students' average weekly grades for the classes under study. The experimenter also recorded the students' six-week grades, their previous weekly average grades, and the percent of assignment-contracts

completed for the classes as a function of the in-school contracting procedure.

Procedure

During Experiment I, out-of-school contracting was sequentially introduced with two of each student's classes. The out-of-school contracting procedure was introduced with one of each student's classes until classroom performance was "consistent". Then the procedure was implemented in another class until performance was consistent in both classes. "Consistent" is defined in terms of an average number of plotted scores falling within the same 20 point percentage range.

In order to implement the procedure, the experimenter met daily with each student during the student's study hall period at the Guided Study Center or at the same time during a specific class. The students and the experimenter filled out duplicate copies of the out-of-school contract (Fig. 2) which contained mini-contract forms for each assignment to be completed for each specific class. Each mini-contract described the assignment to be completed, the approximate amount of time to be spent working on it, the date it was to be completed by, and the criteria for "completeness". After the contract had been appropriately filled out and each student and the experimenter had agreed to the out-of-school contract requirements, the experimenter and each student signed/initialed the contract in the designated spaces provided. In order to evaluate the specified assignment(s) and due dates, the experimenter intermittently met with teachers

(to make sure the student was working on the correct assignments, etc.). The experimenter also obtained and recorded "grade" information for students by retrieving it from teacher record books. Teachers were not directly informed of student subject status. Assignment-contracts were reviewed daily and the result of each mini-contract was marked either "complete" or "incomplete".. One copy of the contract was kept on file as part of the data collection process and the other copy was given to the student.

CHAPTER III

RESULTS

Experiment I

Figure 3 shows the data for all three subjects across two classes involved in Experiment I. Data points represent the average weekly grades obtained in each phase: Baseline I, where no contracting occurred; Baseline II, where in-school contracting occurred; Intervention, where both in-school and out-of-school contracting took place. The total number of points earned for each assignment was divided by the total number of weekly assignment points possible. Table 1 lists the value for the mean for the weekly grade percentages within each phase for each of the three student's classes.

The mean increase from Baseline I to Baseline II for the three subjects is 12 percentage points. The mean change from Baseline I to Baseline II ranged across students from a decrease of 4 percentage points to an increase of 24 percentage points. The mean increase from Baseline II to Intervention for all three students shows an average gain of 5 percentage points. The mean change from Baseline II to Intervention ranged across students from a decrease of 2 percentage points to an increase of 15 percentage points. Thus, the gain in percentage points from Baseline I to Baseline II was more than twice that observed during Intervention.

The number of assignments contracted for each week ranged from 0 to 9 during Baseline II and from 0 to 14 during Intervention

Figure 3. Average weekly grade percentages as a function of no contracting, in-school contracting, and in-school and out-of-school contracting across two classes each for three students.

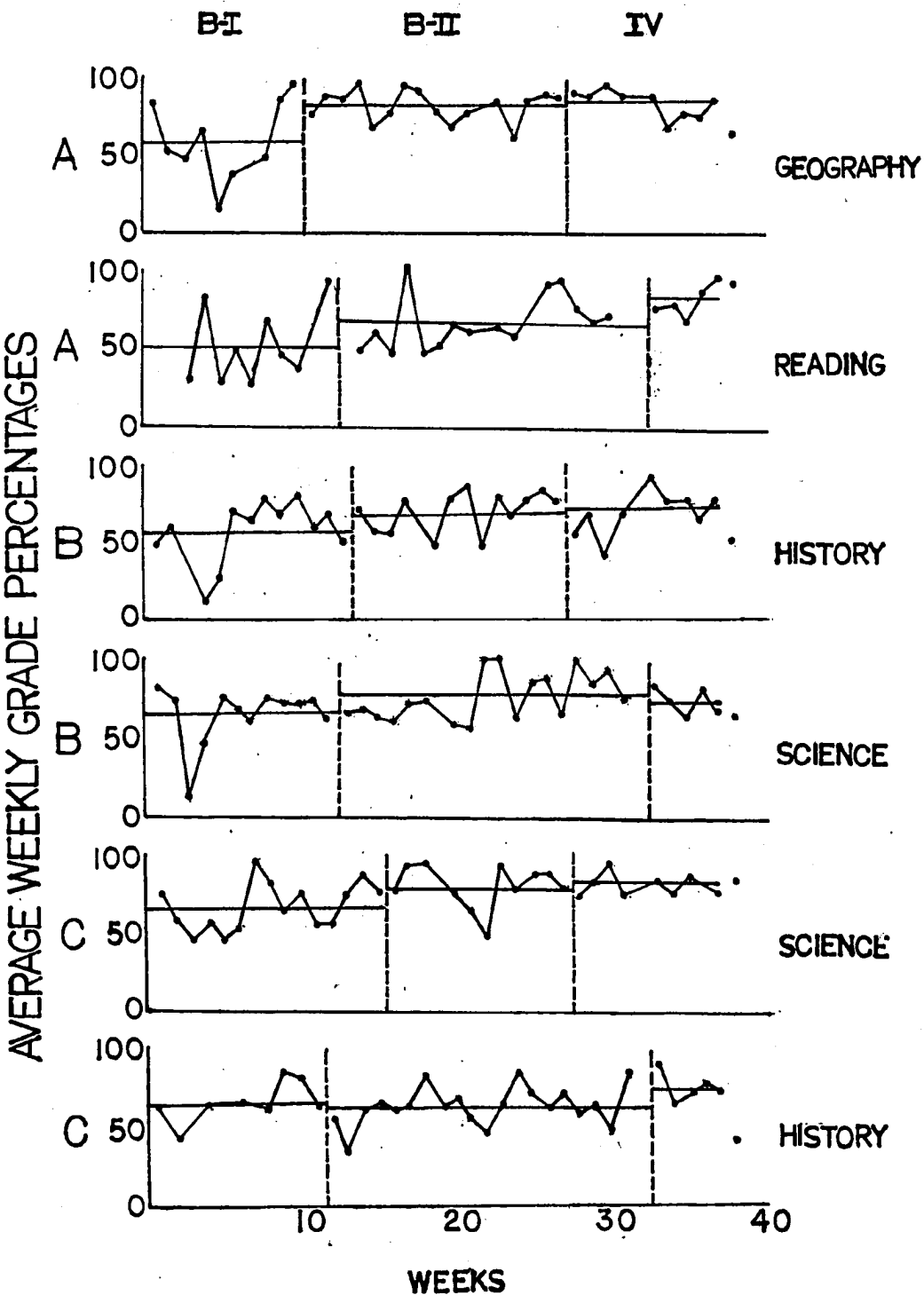

Table 1: The mean for weekly grade percentages within each phase for each student in Experiment I.

		B-I	B-II	IV
STUDENT	CLASS	$\bar{X}$	$\bar{X}$	$\bar{X}$
A	GEO	56	80	81
A	READ	50	66	81
B	HIST	56	67	68
B	SCI	65	77	75
C	SCI	64	78	80
C	HIST	67	63	75

(refer to Table 2). On the average, increases in percentage points during Intervention occurred when the students contracted for at least 4 assignments.

According to Figure 3, Subject A showed the greatest mean gains in percentage points during Baseline II. In geography, Subject A's mean for weekly grades increased from 56% during Baseline I to 80% during Baseline II to 81% during Intervention. Subject A contracted for an average of 2 geography assignments a week during Baseline II and 9 during Intervention and met criteria for "completeness" for all but one assignment during both of these phases. In reading, Subject A's mean for weekly grades increased from 50% during Baseline I to 66% during Baseline II to 81% during Intervention. Subject A contracted for an average of 1 reading assignment per week during Baseline II, 3 assignments during Intervention, and met criteria for "completeness" for all but one reading assignment during both of these phases.

Subject B's mean for weekly grades in history increased from 56% during Baseline I to 67% during Baseline II to 68% during Intervention. Subject B contracted for on the average 2 history assignments a week during Baseline II and 4 assignments during Intervention. Eighty-eight percent of the assignments contracted for met criteria for completeness during Baseline II and 97% during Intervention. Subject B's mean for weekly grades in science increased from 65% during Baseline I to 77% during Baseline II down to 75% during Intervention. Subject B contracted for an average of 1 science assignment per week

Table 2 : A comparison of average weekly grade percentages and the number of in-school and out-of-school contracts completed per week.

(1) Average weekly grade percentages as a function of contracting.

(2) The number of in-school contracts completed.

(3) The number of out-of-school contracts completed.

(4) Average weekly grade percentages as a function of no contracting.

Table 2

PHASE																								CLASS	
	(1)	76	85	83	96	67	74	91	89	77	67	75	81	58	81	88	86	88	84	91	84	84	67	76	74	82
	(2)	1/1	2/2	1/2	0	2/2	2/2	4/4	0	0	1/1	1/1	0	3/3	2/2	4/4	2/2	5/5	5/5	3/3	0	5/5	1/1	4/4	1/1	1/1
	(3)																	6/6	9/9	7/7	0	7/7	4/4	6/6	4/5	4/4
	(4)	81	50	48	61	13	33	--	47	81	93														GEOG	
A																										
		48	60	47	100	45	50	65	60	63	57	90	94	77	68	70	77	78	68	86	95					
		0	0	1/1	0	1/1	1/1	0	1/1	0	0	1/1	9/9	2/2	4/4	2/2	2/2	1/1	2/2	1/1	2/2					
																	2/2	1/1	2/2	2/3	1/1					
		--	--	30	80	28	47	25	66	44	37	--	92												READ	
	(1)	70	57	53	76	62	45	74	83	45	73	68	73	80	74	56	68	42	65	90	74	75	67	76		
	(2)	2/2	1/1	3/3	0	2/3	1/1	1/1	2/2	0	3/3	2/3	1/1	2/3	2/2	2/2	1/1	3/3	1/1	0	2/2	0	0	0		
	(3)															3/4	4/4	1/1	3/3	3/3	4/4	4/4	2/2	0		
	(4)	48	50	--	10	26	69	67	73	69	77	59	65	50											HIST	
B																										
		66	69	64	60	74	75	59	57	100	100	63	84	89	67	100	83	93	78	84	75	63	83	70		
		1/1	0	0	2/2	1/1	4/4	4/4	1/1	0	3/3	1/1	2/2	0	1/1	2/2	0	0	2/2	1/1	0	0	0	0		
																				3/4	0	5/5	1/2	1/1		
		81	74	11	49	74	69	63	75	71	71	72	64												SCI	
	(1)	74	93	93	71	61	47	92	78	87	87	78	71	83	93	77	84	75	82	80	72					
	(2)	2/2	0	1/1	1/2	0	0	1/1	1/1	2/2	0	0														
	(3)																									
	(4)	73	55	43	54	43	50	96	79	62	74	52	54	71	85	73									SCI	
C																										
		58	33	62	63	61	66	82	63	69	56	45	67	82	70	61	70	60	61	48	85	90	65	70	79	70
		1/1	2/2	2/2	2/2	2/2	0	2/3	1/1	0	1/1	0	3/3	4/4	1/1	3/3	2/2	1/1	1/1	3/3	1/1	0	2/2	0	0	0
																						1/1	1/1	2/2	0	0
		64	45	--	66	67	68	60	88	81	63														HIST	

during Baseline II and 3 assignments per week during Intervention. One hundred percent of the assignments met criteria for completeness during Baseline II and 84% during Intervention.

Subject C's mean for weekly grades in history decreased from 67% during Baseline I to 63% during Baseline II and then increased to 75% during Intervention. Subject C contracted for an average of 2 history assignments per week during Baseline II and 1 assignment during Intervention. Ninety-four percent of the assignments met criteria for completeness during Baseline II and 100% during Intervention. Subject C's mean for weekly grades in science increased from 64% during Baseline I to 78% during Baseline II to 80% during Intervention. Subject C contracted for an average of 1 assignment per week during Baseline II and 3 assignments during Intervention. One hundred percent of the assignments met criteria for completeness during Baseline II and 92% during Intervention.

Table 3 represents each subject's six-week and semester grade for each class under study. Subject A showed the greatest grade increases (2.0 - 2.5 grade letters) during the end of Baseline II and during Intervention where the greatest amount of contracting occurred. Subject B's grades varied from 0.5 to 1 letter grade change throughout Baseline II and Intervention although the greatest upward trend in weekly grade averages occurred during Baseline II for both classes under observation. Subject C's science grades increased by 1 letter grade during Intervention, while her history grades remained at a "D" level throughout all three phases of the experiment.

Table 3

Six-week and semester grades within each phase for each student's class under study.

B-I = Baseline I (no-contracting)

B-II = Baseline II (in-school contracting)

IV = Intervention (in-school and out-of-school contracting)

SIX-WEEK AND SEMESTER GRADES

STUDENT	CLASS	1	2	3	SEM	1	2	3	SEM
A	GEOGRAPHY	E	C+	C	C-	D	B	C	C
A	READING	E	D	E	E	E	B-	B-	C
B	HISTORY	E	D	D-	D	C-	D	C-	C
B	SCIENCE	D	C	D+	D	C	B	C	C
C	SCIENCE	E	D	B	D	C	B	B	B
C	HISTORY	E	D+	D+	D	D	D	D	D
D	GEOGRAPHY	D	C-	D	D+	D	C+	C	C
E	MATH	C+	D	E	D	C	B+	C	C+
F	MATH	C	C-	D	C-	C+	C+	B-	C+
G	MATH	B+	B-	C+	B-	C+	B+	B+	B-
			B-I			B-II		IV	

CHAPTER IV

METHOD

Experiment II

Subjects

Subjects for Experiment II consisted of four students currently attending Schoolcraft Middle School. Criteria for subject selection was the same as described for Experiment I. Subject D was a 7th grade female student attending all regular education classes. Although Subject D had a history of low achievement, she frequently turned in all of her assignments. Subject E was a 5th grade female student attending all regular education classes. She evidenced a history of low mathematics achievement. She was referred to the Guided Study Center by her mathematics teacher. Subject E frequently did not turn in her assignments on time or at all. Subjects F and G were 6th grade male students. Although subjects F and G did not have a "D" or lower grade performance level, they did have a low "C" and "B" average respectively and met the other two criteria for subject selection. Subject G ordinarily turned in all of his assignments on time while Subject F frequently did not turn them in on time or at all.

Dependent Variables

Same as Experiment I.

Independent Variable

Same as Experiment I.

Experimental Design

This was the same as described in Experiment I with the exception that Experiment II employed a multiple-baseline design across two groups of two students involving only one class for each student.

Procedure

During Experiment II, the experimenter sequentially introduced the out-of-school contracting procedure using a multiple-baseline design across two groups of students involving one specific class for each student. The out-of-school contracting procedure was introduced with two students until classroom performance was "consistent". Then the procedure was implemented across the second group of students in the same manner (for additional details, see Experiment I procedures.

CHAPTER V

RESULTS

Experiment II

Figure 4 shows the data for two groups of two students involving one academic class in a multiple baseline in Experiment II. As described for Experiment I, data points represent the average weekly grades obtained in each phase. The total number of points earned for each assignment was divided by the total number of weekly assignment points possible. The mean of weekly grades is indicated for each phase by the horizontal bar. Table 4 lists the value for the mean for weekly grade percentages within each phase for each of the four students.

The mean difference from Baseline I to Baseline II for all four subjects is a decrease of 5 percentage points. The mean change from Baseline I to Baseline II for Group 1 was an increase of 1 percentage point and a decrease of 12 percentage points for Group 2. The change from Baseline I to Baseline II ranged from a decrease of 5 percentage points to an increase of 7 percentage points for students in Group 1. and from a decrease of 8 to 15 percentage points for students in Group 2.

The mean difference between Baseline II and Intervention for all four subjects showed a gain of 11 percentage points. The mean increase from Baseline II to Intervention was 8 percentage points for Group 1

Figure 4. Average weekly grade percentages as a function of no contracting, in-school contracting, and in-school and out-of-school contracting across two groups of students and one academic class per student.

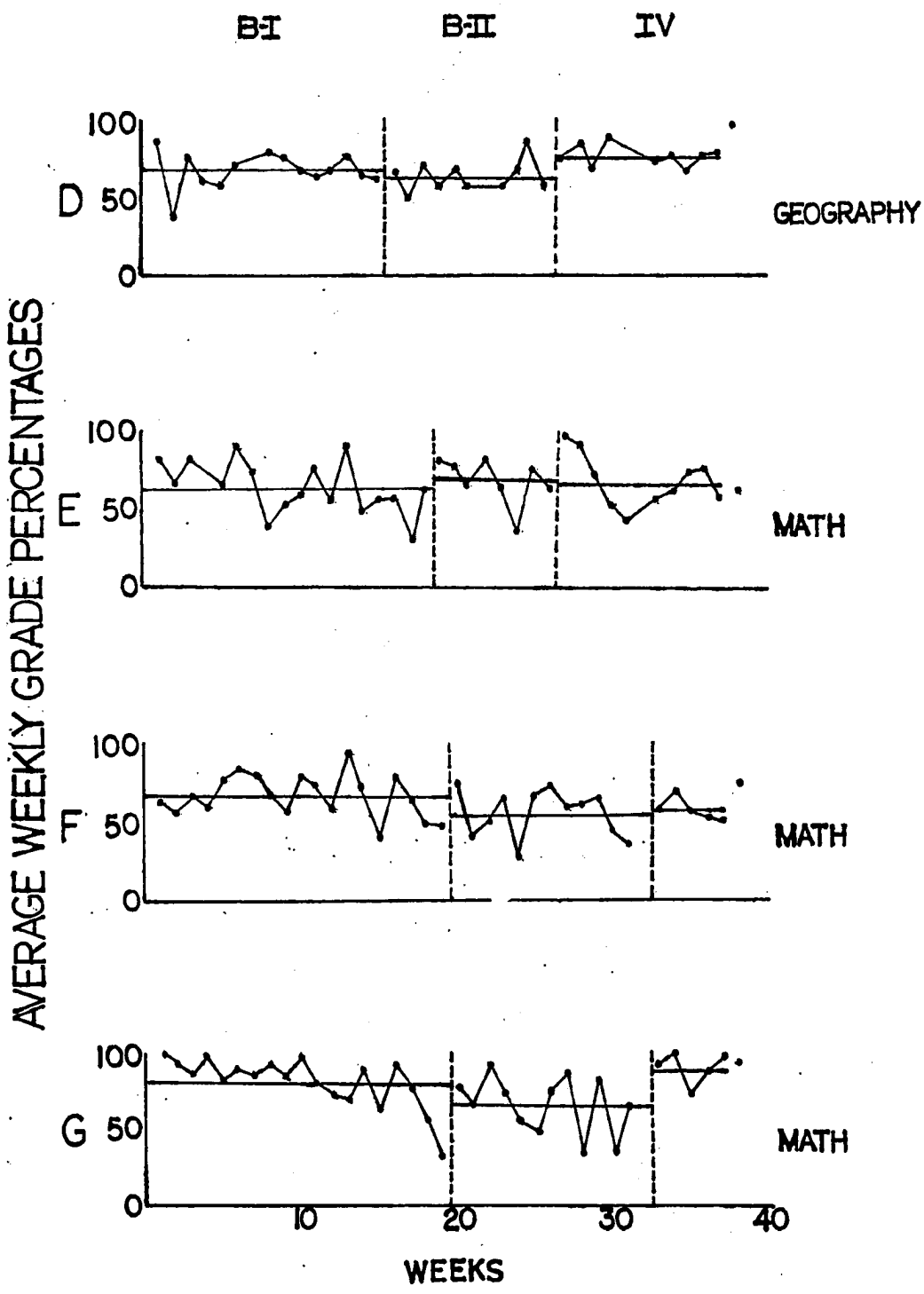

Table 4: The mean for weekly grade percentages within each phase for each student in Experiment II.

		B-I	B-II	IV
STUDENT	CLASS	$\bar{X}$	$\bar{X}$	$\bar{X}$
D	GEOG	66	61	75
E	MATH	62	67	66
F	MATH	63	55	58
G	MATH	79	64	89

and 14 percentage points for Group 2. The mean change from Baseline II to Intervention ranged from an increase of 16 percentage points to a decrease of 1 percentage point for students in Group 1 and from an increase of 3 to 24 percentage points for students in Group 2.

The number of assignments contracted for each week ranged from 0 to 5 during Baseline II and 1 to 12 during Intervention. Group 1 contracted for an average of 2 assignments per week during Baseline II and 8 assignments per week during Intervention. Group 2 contracted for an average of 3 assignments per week during Baseline II and 7 during Intervention (refer to Table 5).

According to Figure 4, the increases in percentage points achieved during Intervention differed by 6 percentage points between Groups 1 and 2. Subjects D and G showed the greatest increases during Intervention following at least a 5 percentage point decrease during Baseline II.

Subject D's greatest mean gains in percentage points occurred during Intervention. In geography, Subject D's mean for weekly grades decreased from 66% during Baseline I to 61% during Baseline II and increased to 75% during Intervention. Subject D contracted for an average of 2 geography assignments per week during Baseline II and 8 assignments per week during Intervention. One hundred percent of the assignments met contract criteria for completeness during Baseline II and 93% during Intervention.

Subject E showed the only mean decreases in percentage points

Table 5: A comparison of average weekly grade percentages and the number of in-school and out-of-school contracts completed per week.

(1) Average weekly grade percentages as a function of contracting.

(2) The number of in-school contracts completed.

(3) The number of out-of-school contracts completed.

(4) Average weekly grade percentages as a function of no contracting.

Table 5

PHASE																			STUDENT
(1)	63	47	69	56	63	53	56	68	82	57	76	81	69	88	71	72	66	75	77	
(2)	2/2	3/3	2/2	0	2/2	0	2/2	3/3	2/2	4/4	2/2	5/5	3/4	2/2	3/3	1/1	4/4	1/1	1/1	D
(3)											6/6	4/5	7/8	7/7	4/5	5/5	3/3	5/5	2/3	
(4)	84	36	71	58	56	68	--	78	73	66	64	67	85	62	60					
	80	77	65	80	64	32	75	64	97	90	70	50	40	54	60	70	74	55		
	3/3	1/1	3/3	1/1	2/2	2/2	0	1/1	3/3	3/3	1/1	0	1/1	1/2	3/3	3/3	2/2	2/2		E
									8/9	9/10	8/11	1/4	9/9	3/5	3/8	2/3	3/3	5/7		
	80	63	80	72	63	90	73	36	50	57	71	53	90	47	53	56	28	60		
(1)	71	43	50	67	25	68	71	60	60	63	46	37	60	70	57	53	50			
(2)	3/3	2/3	0	1/1	0/1	0	2/2	2/3	5/5	2/3	4/4	3/3	3/4	4/4	4/5	3/4	0			F
(3)													3/3	3/4	3/5	4/6	1/1			
(4)	60	53	63	57	71	80	77	63	53	75	71	57	90	70	37	72	60	48	47	
	74	65	90	70	55	47	73	83	33	80	33	64	93	100	70	87	93			
	1/2	0/2	0	0	2/3	0	2/2	1/3	3/5	3/3	4/4	4/4	3/4	1/2	1/3	2/3	4/4			G
													3/5	3/3	4/6	6/7	0			
	100	92	84	97	77	87	83	88	83	93	77	70	67	87	60	90	73	55	30	

during Intervention (1 percentage point). Subject E's mean for weekly grades in math increased from 60% during Baseline I to 67% during Baseline II and dropped to 66% during Intervention. Subject E contracted for an average of 2 math assignments per week during Baseline II and 9 assignments per week during Intervention. One hundred percent of the assignments met contract criteria for completeness during Baseline II and 78% during Intervention.

Subject F's mean for weekly grades in math dropped from 63% during Baseline I to 55% during Baseline II and increased to 58% during Intervention. Subject F contracted for an average of 3 math assignments per week during Baseline II and 7 assignments per week during Intervention. Eighty-six percent of the assignments met criteria for completeness during Baseline II and 78% during Intervention. Subject F's weekly grades consistently descended from the weekly grades achieved at the beginning of each phase.

Subject G achieved the greatest overall mean increase for weekly grades out of all four subjects. Subject G's mean for weekly grades in math dropped from 79% during Baseline I to 64% during Baseline II and then increased to 89% during Intervention. Subject G contracted for an average of 3 math assignments during Baseline II and 7 assignments per week during Intervention. Seventy-one percent of the assignments met contract criteria for completeness during Baseline II and 72% during Intervention. As with Subject F, Subject G's weekly grades also showed a gradual decline during Baseline I and II.

As described in Experiment I, Table 3 represents each subject's six-week and semester grade for the class under study. Subject D's

six-week grade for the class under study was calculated on a percentage basis. The six-week math grades for students E, F, and G were calculated differently. For these students, the math teacher assigned a grade to each assignment where an "A" = 5 points, "B" = 4 points, "C" = 3 points, "D" = 2 points, and an "E" = 1 point. At the end of the six-week period, all of the assignment scores are totalled, divided by the total possible (# of assignments x 5), and a six-week grade is assigned. Math workbook scores were totalled and an overall six-week grade assigned

workbook grade assigned for that six-week period, this affected the six-week assignment grade in the following manner: An overall "A" on workbook assignments raised the calculated six-week assignment grade by one letter grade, an overall "B" raised the grade by 0.5 letter grades, a "C" made it remain the same, a "D" lowered it by 0.5 letter grades, and an "E" lowered it by 1 letter grade. Although the math teacher kept the workbook grades separate from the daily assignment scores, the experimenter included these grades in calculated the weekly mean scores.

Both of the students in Group 1 achieved a grade increase of 1.5 letter grades between the end of Baseline II to the beginning of Intervention. Subject D's geography grades remained at a "D" level throughout Baseline II but increased to a "C - C+" level during Intervention. Subject E showed the greatest grade increase of all. Subject E's math grades varied from an increase of 2 letter grades during Baseline II to another increase of 1 letter grade during the middle of Intervention. The grades for the students in Group 2 did

not increase as much as the grades for Group 1. Subject F's grades increased 1.5 letter grades during Baseline II and 0.5 letter grades during Intervention. Subject G's grades increased 1 letter grade during Baseline II and remained at that same level following Intervention. Although Subject G showed the greatest mean gain in weekly grade points (25 percentage points) during Intervention, the student's semester grade remained at the pre-intervention level.

CHAPTER VI

DISCUSSION

In both experiments, the effects of increased contracting varied substantially across students. The change in mean weekly grade percentages ranged from an increase of 25 percentage points to a decrease of 2 percentage points across individual students following the introduction of out-of-school contracting in addition to in-school contracting. Although the results indicate an increase in six-week grades for at least one class for six of the seven students following Intervention, it cannot be concluded from the data that an increase in contracting increased the accuracy of the assignments completed. It appears that an increase in contracting (the number of assignments contracted) increased the number of assignments completed and turned in, apart from increasing the accuracy of the assignments completed.

Bristol and Sloane (1974) found that contracting was selectively effective in improving the test performance of below average students. The present study found that the out-of-school performance contract selectively benefited those students who attended the Guided Study Center on a regular basis and previously did not complete and/or turn in their assignments (refer to Figures 3 and 4; Subjects A, E, and F).

Consistent with White-Blackburn et al., (1977), the present study found that contracts successfully increased on-task behavior,

daily assignment completion, and six-week grades of students attending a public school. In the present study the accuracy of the assignment(s) completed may not have increased substantially, but students received at least partial credit for turning in completed assignments.

In contrast with previous contracting procedures involving extrinsic reinforcers, the consequences in the present study involved circling "complete" or "incomplete" on the contract at the end of the hour in the GSC or on the following day for the out-of-school contracts. Aside from these consequences, there may have been other implicit factors that affected work completion. The student may have been reinforced in the past for following specific instructions so that the specificity of the assignments or work to be finished increased the probability of contract completion.

Consequences in the form of feedback, results, social approval/disapproval from staff members and the classroom teacher also probably affected contract completion rate to some extent. In the present study, a complete GSC contract may have resulted in approval from teachers and peers and maybe other consequences such as grades, bonuses, or free time, etc. Although the out-of-school contracts were not shown to or returned to classroom teachers, a completed out-of-school contract may have resulted in approval from parents and peers and other consequences stated above for assignment completion or improvement.

Finally, the contracting environment (the GSC and taking the

contract home) may have increased the probability of study behavior due to the novelty of the procedure and the environment. The contracts specified the task, the amount of work to be completed, and the time in which it was to be completed. It was signed by both the student and the contract manager. In this manner the contracts appeared to take on "official" contract qualities. Unlike study hall, the GSC provided a structured setting for academic assignment completion and was a new addition to the school's current program.

It appears that the behaviors or study skills that were obtained as a result of the structured setting of the GSC and the contracting procedures generalized to outside of the school as an additional prompt or aid for completing academic assignments for those students who previously did not work on "homework" and turn in their assignments. Both in-school and out-of-school contracting may have increased the probability of study behavior by directly specifying the task(s) to be completed and decreasing the likelihood that other behaviors would be reinforced.

In general, the data show that weekly grades and six-week grades varied across subjects and classes following the introduction of out-of-school contracting. Some student's grades increased, some decreased, and some student's grades remained the same.

Subject A's weekly grades and six-week grades increased significantly with the increase in contracting. This was most notable in Subject A's reading class during Baseline II. Contracting for Subject A was most beneficial probably because it organized assignments and specified how they should be completed. Through

interactions with Subject A within the GSC, the experimenter observed that contracting not only increased Subject A's weekly grades, but it also taught and helped to maintain specific study behaviors that were lacking.

In contrast, Subject B's mean for weekly grades for both classes remained relatively consistent across Baseline II and Intervention, yet her six-week grades varied by at least one grade each six weeks during these phases. This suggests that the weekly grade scores do not correspond exactly with the assigned six-week grades. Perhaps teachers weighted different assignments as more important than others in determining six-week grades. Consistency across Baseline II and Intervention phases in mean weekly grades was also observed in at least one class for Subjects A, C, F, and E (refer to Fig. 3 and 4). It is possible that the lack of change was the result of ceiling effects as these subjects received high scores. However, this could not be confirmed with the present data.

Decreases in means for weekly grades and six-week grades during Baseline II and Intervention may be attributed to a decrease in the number of assignments that were contracted. Subject C did not contract for many science assignments during Baseline II or history assignments during Intervention; however, mean increases for weekly grades were observed in both classes. Subject D did not contract for many geography assignments during Baseline II but following an increase in contracting during Intervention, the mean for weekly grades and six-week grades increased substantially. It may be that

a minimum number of assignments must be contracted for before an increase in weekly grades or six-week grades is observed.

It should be noted that both Subjects B and C decreased the number of in-school assignment contracts during Baseline II and Intervention because they did not "get along" with one of the two GSC managers; thus, both subjects began coming to the GSC onlt 2 to 3 days per week instead of 4 to 5 days.per week. In general, in-school contracting decreased for all seven students near the end of the school year as different classroom activities and schedules arose (e.g. string art projects, plays, outdoor "Fun Day", etc.).

The data for Subjects E, F, and G showed the greatest amount of variability between weekly grades during all three phases of Experiment II. Several factors may account for this effect. Although all three subjects were in mathematics classes at different hours, they all had the same math teacher. Thus, teacher differences as a source of variation can be eliminated.

The variability between weekly grades may have been due to the varying degree of difficulty of the assignments in the lesson(s) being covered. Many of the contracts for these students were for repeated assignments that were not completed the first time they were contracted or for assignments that were done in class or at home and were handed back by the teacher and required to be corrected. Subject E frequently had to contract to correct her assignments more than two times. She often did not hand in the corrected assignments on time and therefore did not receive any credit for those assignments.

The increase in weekly grades at the beginning of Intervention is attributed to an increase in assignment accuracy and completion and in the number of workbook pages completed. Subjects F and G did not have to re-do or correct as many assignments as Subject E and their weekly grades and means for weekly grades increased in a short period of time during Intervention.

Although circling "complete" and "incomplete" on each student's GSC contract could be performed immediately following the completion of the specified task, this could not be performed on the student's copy of the out-of-school contract unless the student returned with it the following day. The experimenter in the present study observed a decrease in the number of contracts returned after a period of 1 to 2 weeks during Intervention. Thus, the experimenter frequently marked "complete" or "incomplete" on just the experimenter's copy as the student looked on. Contingencies for returning the contract were not specified during the present study, yet they are highly recommended for future contracting studies. In addition to Experiments I and II, a future experiment might involve introducing out-of-school contracting first and then in combination with in-school contracting.

It appears that at least three conditions were involved in the present study's intervention: the structured setting, the contract manager, and the contract procedures themselves. Whether it was a combination of these three factors or any one of the three that influenced academic performance, the present out-of-school contracting procedure was a simple application of in-school contracting procedures

to outside of the school. Teachers, other school staff, or parents can be trained to become contract managers and implement this procedure in the classroom (MacDonald et al., 1970; Arwood et al., 1974) or the home (Cohen et al., 1971). It not only allows student and teacher participation, but it allows for parent participation by notifying them of their child's assignment(s). Parents can become even more involved by extending the performance contract procedures into a contingency contract in which specific reinforcers are contingent upon the completion of academic tasks. Whether contracting occurs inside or outside of the school situation, it appears to be a positive approach to academic and non-academic behavior change.

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