TO PRAISE AND IGNORE CLASSROOM BEHAVIORS, OR TO PRAISE AND PUNISH CLASSROOM BEHAVIORS: THAT IS THE QUESTION

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by

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ABSTRACT

Purpose

The present study involved an experimental analysis of behavior in which the relative efficacy of two behavioral management strategies and their functional relationship to three dependent behaviors (appropriate, time-off-task, and disruptive were examined. One strategy involved verbally praising appropriate behaviors while concomitantly ignoring disruptive behaviors. The other strategy involved verbally praising appropriate behaviors while concomitantly softly reprimanding disruptive behaviors. The study also incorporated two adjunct investigations. These involved examining the rates of acceleration and deceleration of appropriate and disruptive behaviors during treatment and reversal phases, and examining the teacher's reactions to the two strategies.

Method

The study was carried out in two general science classes in a predominantly white public junior high school. Six subjects (all white males taught by the same teacher) were selected for the study on the basis of their frequent disruptive behavior.

Twenty three college students, trained in behavioral observation techniques, daily observed the classroom behavior of the six subjects and the teacher. A time sampling technique was used with target subjects and a frequency count technique was used for teacher behaviors. The student behaviors were rated in seven categories: (1) task

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relevant (TR), (2) social behaviors (S), (3) time-off-task behaviors (TO), (4) motor behaviors (M), (5) noise making (N), (6) verbal behaviors (V), and (6) aggressive behaviors.

Acceptable observer reliabilities (85 percent agreement) were achieved under training for all observers. Thereafter reliabilities were computed during each phase for target student observers and only one additional time for teacher observers.

The basic design for the study was a multiple baseline design with reversals. Four basic experimental conditions were introduced and replicated in each class: (1) baseline; (2) introduction of verbal praise for appropriate behaviors plus ignoring inappropriate behaviors; (3) reversal; and (4) introduction of praise for appropriate behaviors plus soft reprimands for disruptive behaviors. In one class the order of conditions was reversed.

Results

Line graphs and tabular data were used to illustrate the relationship between the dependent behaviors and the baseline and experimental conditions. The three levels of analysis were: (1) combined classes data, (2) inter-intra class(es) data, and (3) single subjects data. In addition, teacher behaviors were presented in tabular and graphic form.

Both idiographic and differential approaches were used to formulate the descriptive analysis. In addition, where applicable, nonparametric statistical tests were performed on the data. The

results depicted four major findings. First, both strategies consistently and dramatically produced higher levels of appropriate and lower levels of disruptive behaviors than did the baselines and reversals. Second, a comparison of the two treatment approaches revealed that the praise plus soft-reprimand strategy had a slightly greater impact on the behavior of the targets than did the praise plus ignore strategy. Third, desirable behaviors extinguished more rapidly during the praise plus soft reprimand withdrawals than during the praise plus ignore withdrawals. Fourth, time-off-task behaviors were slightly higher during the praise plus soft-reprimand phases than during the praise plus ignore phases.

Conclusions

Five major conclusions were derived from the study:

1. Competent teachers should use positive forms of discipline far more frequently than they do reproofs in managing student behaviors.

2. The teacher who uses a great deal of praise as an immediate consequence for appropriate behavior should find that the frequency of such behaviors will increase.

3. The teacher who uses praise in concert with immediately softly reprimanding or ignoring disruptive behaviors should find that the frequency of such behaviors will decrease.

4. The teacher who uses soft-reprimands as aversive social consequences for disruptive behaviors rather than ignoring such behaviors should find that the frequency of such behaviors should decrease more rapidly.

5. The study adds confidence to the assertion that teachers can be taught systematic procedures in a short period of time and can use them to gain more desirable behaviors from their students.

Suggestions for further research were provided.

TABLE OF CONTENTS

CHAPTER		PAGE
I.	INTRODUCTION	1
II.	METHOD	5
	Subjects and Setting	5
	Teacher	5
	Observation Procedures	6
	Student and Teacher Behavioral Coding Categories	6
	Observer Training and Reliability	8
	Observation and Recording	10
	Apparatus	13
	Experimental Procedure	13
	Teacher Feedback and Reactions	17
III.	RESULTS	18
	Combined Classes Analysis	19
	Qualitative Descriptive Analysis	19
	Quantitative Descriptive Analysis	20
	Statistical Analysis	27
	Inter-Intra Class(es) Analysis	33
	Individual Subjects Analysis	36
	Overview	36
	$\underline{S}_1$	37
	$\underline{S}_2$	42

CHAPTER PAGE

$\underline{S}_3$ 45

$\underline{S}_4$ 48

$\underline{S}_5$ 51

$\underline{S}_6$ 54

Teacher Behavior 57

IV. DISCUSSION 64

Conclusions 68

Suggestions for Further Study 69

LIST OF REFERENCES 71

APPENDICES 75

Appendix A 76

Appendix B 79

Appendix C 82

Appendix D 84

VITA 88

LIST OF TABLES

TABLE		PAGE
1.	Mean Percentage Rates for Class A and Class B for Combined Phases	22
2.	Index of Change in Rate of Behavior for PSR and PI Phases for Each Subject	28
3.	Index of Change in Rate of Behavior for Reversal Phases	29
4.	Results of the Wilcoxon - Matched - Pairs Signed Ranks Test for Disruptive Behavior	31
5.	Results of the Wilcoxon - Matched - Pairs Signed Ranks Test for Appropriate Behavior	32
6.	Mean Percentage Rates for Class A and Class B for Each Phase	35
7.	S_1 Mean Percentage Rates for Each Phase	40
8.	S_2 Mean Percentage Rates for Each Phase	44
9.	S_3 Mean Percentage Rates for Each Phase	47
10.	S_4 Mean Percentage Rates for Each Phase	50
11.	S_5 Mean Percentage Rates for Each Phase	53
12.	S_6 Mean Percentage Rates for Each Phase	56
13.	Frequency of Teacher Behaviors Directed Toward Target Subjects During Each Phase for Class A and Class B Combined	58

TABLE PAGE

A-1. Behavior Rating Agreement for Experimenter and Target Student Observers During Each Phase For Class A 76

A-2. Behavior Rating Agreement for Experimenter and Target Student Observers During Each Phase For Class B 77

A-3. Behavior Rating Agreement for Experimenter and Teacher Observer 78

A-4. Frequency of Teacher Behaviors During Each Experimental Phase In Class A 84

A-5. Frequency of Teacher Behaviors During Each Experimental Phase In Class B 86

LIST OF FIGURES

FIGURE		PAGE
1.	Sample portion of behavioral rating form	12
2.	Delineation of experimental conditions in class A and class B	16
3.	Percent of target behaviors during each phase for classes A and B combined	21
4.	Percent of target behaviors during each experimental phase in class A and B	34
5.	Percent of appropriate, time-off, and disruptive behavior for $\underline{S}_1$	39
6.	Percent of appropriate, time-off, and disruptive behavior for $\underline{S}_2$	43
7.	Percent of appropriate, time-off, and disruptive behavior for $\underline{S}_3$	46
8.	Percent of appropriate, time-off, and disruptive behavior for $\underline{S}_4$	49
9.	Percent of appropriate, time-off, and disruptive behavior for $\underline{S}_5$	52
10.	Percent of appropriate, time-off, and disruptive behavior for $\underline{S}_6$	55
11.	Percent of teacher behaviors and student behaviors under experimental phases for combined classes	59

FIGURE PAGE

A-1. Percent of student behaviors as a function of teacher behaviors during each experimental phase in class A . 84

A-2. Percent of student behaviors as a function of teacher behavior during experimental phases in class B . . . 86

CHAPTER I

INTRODUCTION

Effective teachers have long known that casually praising desired behaviors and generally ignoring disruptive ones can be useful procedures for helping maintain good classroom discipline. In addition, a number of field experiments have demonstrated that teacher attention in the form of praise is an optimal means of reducing inappropriate classroom behavior (Becker, Madsen, Arnold, & Thomas, 1967; Hall, Lund, & Jackson, 1968; Krumboltz, 1966; Madsen, Becker & Thomas, 1968a; Madsen, Becker, Thomas, Koser, & Plager, 1968b; Madsen, Madsen, Saudargas, Hammond, & Smith, 1970; Walker, & Buckley, 1968). The studies employed elementary school children and praising appropriate behavior was usually concomitant with ignoring disruptive behavior. Two studies stand alone in that they used the above approach with adolescent population (Callahan, 1972; Cormier, 1970). These studies are based on the premise that inappropriate behaviors will extinguish if they are not attended to and that praising behavior which is incompatible with disruptive behavior will facilitate that extinction.

Despite the generally positive results obtained with the praise-ignore combination in the previously identified studies, closer scrutiny of the experimental prosthetic environments ~~real~~ that (a) some teachers did not actually ignore all inappropriate

behavior (Krumboltz, 1966; Madsen, et al., 1968a), (b) the application of the procedure was not always effective (Hall, et al., 1968; Krumbolta, 1966), (c) some teacher's expressed dissatisfaction with approach (Krumboltz, 1966) and (d) in two studies the use of the procedure resulted in an increase in disruptive and decrease in appropriate behaviors (Callahan, 1962; O'Leary, Becker, Evans, & Saudagas, 1969). In addition, the approach appears to have two inherent practical limitations. First, it is difficult for teachers to ignore behaviors that they have always reprimanded in the past. Second, some unacceptable behaviors such as talking out loud or walking around the room cannot be totally ignored since they interfere with normal classroom procedures and instruction.

Ausubel (1961) adamantly rejects the idea that only positive forms of discipline are beneficial. He contends that a child does not come to regard rudeness as an undesirable form of behavior simply by reinforcing respect for others. As Ausubel (1961) asserts, "It is impossible for children to learn what is not approved and tolerated simply by generalizing in reverse from the approval they receive for the behavior that is acceptable (p.29)."

Thus, one strategy that may be more potent than the praise plus ignore combination involves the combined use of punishment and reward in the form of social reproof and praise. Reproof reminds the student what not to do. The reward of appropriate alternative behavior tells the student what he should do. The basic rationale is to hold undesirable behaviors in abeyance until

the teacher can establish more acceptable behaviors through positive reinforcement. That is, the teacher can suppress the undesirable behaviors until some desirable behaviors has a chance of becoming strong enough to replace the unacceptable responses (Clarizio, 1972).

The present review of the literature reveals only one study which used a praise-reproof combination in an applied classroom setting (McAllister, Stochawiak, Bear, & Conderman, 1969). McAllister et al. (1969) examined the effects of teacher praise and disapproval on two target behaviors of a high school class of 25 students. The design called for disapproving statements to be delivered to an individual student, while praise was delivered to the class as a whole. The results demonstrated that the combination of disapproval for target behaviors and praise for appropriate, incompatible behaviors substantually reduced the incidence of target behaviors. The experiment called for loud verbal reprimands as the punishing consequence. It should be noted, however, that two studies have found the exclusive use of soft reprimands to be more effective than the exclusive use of loud reprimands in reducing disruptive classroom behavior (O'Leary, Becker, & Wesley, 1969; O'Leary, Kaufman, Kass, & Drabman, 1971). In addition two studies employing punishment in the form of loud verbal reprimands and disapproving statements report that the punishment increased the frequency of the very behavior it was suppose to decrease (Madsen, Becker, Thomas, Kaser & Plager, 1968; Thomas, Becker, & Armstrong, 1968).

Thus, the primary aim of the present study was to compare the relative efficacy of two combinations of teacher supplied

social consequences on reducing disruptive classroom behaviors of junior high school students. One combination involved verbally praising appropriate behaviors while concomitantly ignoring disruptive behaviors. The other combination involved verbally praising appropriate behaviors while softly reprimanding disruptive or unacceptable behaviors.

The study also incorporated one ancillary and one collateral investigation. First, a brief glimpse at the reactions of the teacher to the two approaches was examined. Second, the time required to produce behavioral change with the two approaches was examined. That is, the data were analyzed to determine which approach caused the most rapid rate of diminution in disruptive behavior and/or increase in appropriate behavior.

CHAPTER II

METHOD

Subjects and Setting

The study was carried out in a predominantly white public junior high school located in Knoxville, Tennessee. Official sanction for the study was obtained from the school principal. Two ninth grade General Science classes taught by the same teacher were selected. One class met from 9:35 until 10:30 a.m. The other class met from 10:35 until 11:30 a.m.

The target subjects (Ss) were three students from each class who were nominated by the teacher on the basis of their frequent disruptive behaviors. The Ss were all white males. The teacher categorized the target Ss as being "mischievous, incessant talkers, who will not stay in their seats." Subsequent observations were made by the experimenter (E) prior to the study to confirm the teacher's initial choices.

Teacher

The teacher, a black, age 29, received her B.S. in Science Education in 1964, and M.S. in Natural Science with emphasis on Chemistry in 1969. She has been teaching in various public school systems in Tennessee for nine years and is presently working toward an Ed.D. in Curriculum and Instruction. She volunteered for the study because she was experiencing problems in managing

classroom behaviors and wanted to become more familiar with the basic steps in precision teaching.

The teacher used self-made individualize learning packages as the basic mode of instruction. Emphasis was placed on individual and small group study.

Observation Procedures

Student and Teacher Behavioral Coding Categories

The first major preliminary task of the study was to select behavioral categories which could be expected to occur with some frequency in the repertoire of students. The categories were rated:

Appropriate Behaviors

A. Tr--Task relevant: answering or asking questions (must be lesson oriented), writing when directed to do so, looking at book when directed to do so, hand raising to get teacher's attention, looking at teacher while he is lecturing, looking at another student who is participating in lesson activity, and any other behavior that is consistent with the ongoing lesson.

B. S--Appropriate social interaction: includes talking, laughing, playing games, telling jokes, or just sitting at one's desk when students have not been instructed to engage in lesson activity and when these behaviors are not forbidden by the instructor. S behavior will usually occur during free time.

Inappropriate Behaviors

A. To-- Time-off-task: Just sitting at one's desk without appropriate materials or attempting to get appropriate materials, looking at non-lesson materials, gazing out the window or looking around the room when lesson activity has been assigned. The student, however, is not distracting another student by his inattention.

B. Disruptive behavior includes any behavior that disrupts the academic performance of another student

M--Motor behaviors: getting out of seat, standing up, walking around, rocking in chair, moving chair, gesturing without talking, squirming in chair, exchanging looks with other student, tapping objects, or any disruptive movement.

N--Noise making: tapping feet, clapping hands, tearing papers, tapping pencil on desk, or any other nonverbal noise-producing behavior not directly involved in Tr or S.

V--Verbalization: crying, screaming, singing, whistling, laughing, coughing, or engaging in conversation (talking and listening) with other children when these behaviors are not consistent with Tr or S.

A--Aggressions: hitting, pushing, shoving, pinching, slapping, striking, playing with objects, grabbing objects from another child, or destroying objects.

Appropriate behaviors consisted essentially of behaviors that were consistent with the ongoing lesson activity and/ or appropriate social activities permitted by the teacher at the time of observation. Inappropriate behaviors included responses that disrupted the academic performance of another student and/or any identifiable behavior which indicated that the student was not attending to teacher prescribed classroom activities. Behaviors not specifically defined were not rated, and those which the observer could not see were rated with a question mark(?).

The behavioral categories developed for teacher behaviors consisted of four general classes. The following categories were rated:

A. P--Verbal praise: Administered to individual student for appropriate behaviors: "Thank you for being quiet," "Fine job," "That's good", You're studying well," "I'M delighted to see you so quiet", etc.

In general, statements of affection, approval or praise.

B. OP--Other positive attention: When the intent is clearly positive: Smiling, embracing, kissing or patting when simultaneously not administering verbal praise.

C. SR--Soft reprimands: Administered to individual student for disruptive behaviors: Teacher is in the presence of or walks to the student and verbally reprimands so that only the student being reprimanded can hear. The teacher will provide you with a subtle cue by placing hands together behind back when reprimanding the student.

D. ON--Other negative attention: When the intent is clearly negative; Loud verbal reprimanding; criticizing, yelling, scolding, raising voice, belittling, making fun of the student, threating, using sarcasm, striking the student, shaking head.

E. Other social interaction: Ignore other kinds of social interaction between the teacher and student. May be initiated by either and considered neutral in tone. Example: looking at the student, nodding head, asking a question, giving a direction (i.e., "Go to the board," "Take question five.") or listening to comments or questions.

F. ? -- If the teacher does not provide the cue for soft reprimands denote interaction with a question mark.

Observer Training and Reliability

The observers consisted of twenty three undergraduate students enrolled in Educational Psychology courses at the University of Tennessee and Roane State Community College. The observers received partial academic credit for participating in the study. Some observers were also paid $1.50 per session.

The pre-experimental observer training period consisted of two phases. First, the observers were given coded lists of the student and teacher behavioral categories. They were required to

study the list until each observer became familiar with all of the codes. An oral examination was employed to determine 100% retention of the codes and the various behaviors represented by them. The second phase consisted of two training sessions. During the first session target student observers were trained to record categories of student behaviors via video tape which simulated classroom activities. Time observations were made at each 10 second interval of each four minute segment of the tape. During the second session, teacher observers were trained to record the frequency of teacher behaviors. From the video monitor, observers made a frequency count of behaviors for each four minute setment of the tape.

In both sessions inter-rater reliability was established by having the trainer make a simultaneous observation record. Agreement of the two records was checked interval by interval. The percentage of agreement of the record [number of agreements/ number of agreements plus disagreements] was used as the index of inter-rater reliability. Each observer was required to attain a minimum reliability score of 85% on four 4-minute time segments.

Inter-rater reliability was also established in the classroom by having the E periodically make simultaneous in-class reliability checks based on 24 minutes of observations. The results in Class A ranged from .83 to .94 (Mean = .88). Table 1, Appendix A, contains the behavior rating agreement for E and target student observers in Class A for the training session and

the classroom reliability checks. The results in Class B ranged from .83 to .96 (Mean = .89). Table 2, Appendix A, contains the behavior rating agreement for E amd target student observers in Class B for the training session and classroom reliability checks.

Following the training session each target teacher observer was checked only one time in class for a reliability rating. Each check was based on 24 minutes of observation. Table 3, Appendix A, provides the results of training and classroom reliability checks for the teacher observers. The results ranged from .83 to 100 (Mean: 89).

Observation and Recording

The basic data of the study consisted of the relative frequency of occurrence of classes of student behaviors in relation to classes of teacher behaviors utilizing the rating scales previously described. The raters (11 target students raters and 12 target teacher raters) observed alternately for each daily session. Except for reliability checks, there were two observers present in each class, i.e., one for the teacher and one for target students. The observers sat at the rear or side of the classroom, and were instructed not to interact with the pupils. Experimental changes were initiated without informing observers of these changes.

The student observers were told to wear dark shaded glasses to minimize eye contact. They were given the following instructions developed by Williams (1970).

> One behavior should be rated every ten seconds. Rate the first observable behavior that occurs following the ten second count. In rating disruptive student behaviors which occur simultaneously, give priority in the following order A,V,N,M. If appropriate and inappropriate behaviors occur simultaneously, rate the inappropriate component.

The teacher observers monitored only the teacher's behavior toward individual target Ss. They were given the following instructions:

> Make the appropriate notation on your observation sheet each time the teacher emits one of the target behaviors. Each time the teacher changes her behavior, note the new behavior. Therefore, as long as the teacher continues to emit the same behavior to the same student, she receives only one notation for that behavior. Rate only behavior directed at the student being observed by the target student observer. Do not rate behavior directed to the class as a whole or to target students not being observed by the student observer at any given time. Remember you are to listen for the time-change-sequences, and be sure to place the appropriate code under the student being observed by the student observer. The recording forms and pencils will be provided daily by the experimenter. Also, transportation will be provided.

The order in which the three Ss were observed during each class period was systematically varied. Each S was observed for four minutes on a rotating basis for a total of eight minutes daily. The total daily observational time for the teacher and students in each class was 24 minutes, 48 minutes for both classes.

Behavioral recording forms were made up for recording behaviors. A portion of the forms is illustrated in Figure 1. The form contains sequential cells for each alternate four

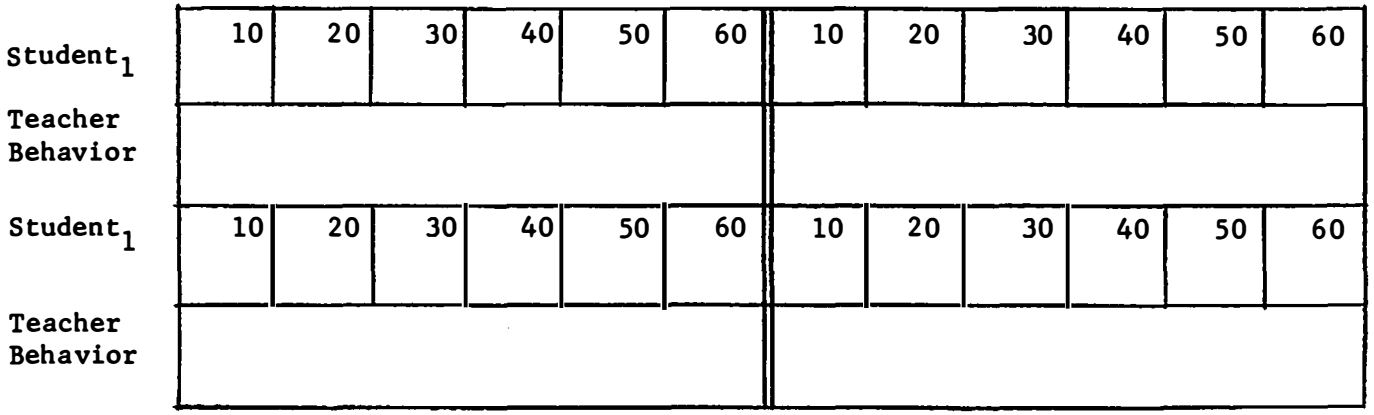


Figure 1. Sample portion of behavioral rating form.

minute observation period. Each cell represents an interval of 10 seconds. The occurrence of a student behavior at any interval was recorded by placing the proper code (TR, To, S,V,M,A,N) in the appropriate cell for the interval. No category of behavior was rated more than once for each interval. A daily percentage of each behavior was obtained by dividing the number of cells in which the behavior was recorded by the total number of intervals in the class period (this was done for both individual and group data). Teacher behaviors were recorded by simply placing the code in the appropriate space below the rows provided for student behaviors.

Apparatus. A tape recorder was used as the timing apparatus and to insure synchronization of observation time for each daily session. The second-intervals were reliabily recorded for the student observers, and announcements of time-change-sequences were recorded for teacher observers. The recorder was equipped with a three slot adapter from which three ear plugs were connected. The third ear plug was used by the E for the reliability checks. The recorder was a portable 8-track cartridge player (13" high, 10¾" deep, 6 1/8" wide), Channel Master, Model 6208.

Experimental Procedure

The basic design for the study was a multiple baseline design with reversals. To control for the influence of extraneous variables the experimental conditions were staggered in a manner

which avoided simultaneous duplication of treatments across classes (Class A and Class B). Control for order effect was accomplished by having the teacher reverse the order of implementation of treatments for the two classes. The four basic experimental conditions may be summarized as consisting of: a double baseline; introduction of praise plus ignoring inappropriate behavior (PI); reversal; and introduction of praise plus softly reprimanding disruptive behavior (PSR). The conditions were replicated within each class.

To minimize the possibility of distance as a key factor in reprimanding Ss, the teacher initially moved all students in both classes to strategic positions in the room so that the teacher could administer soft reprimands without walking a great distance. The seating arrangement made it easier for the teacher to reprimand the target students and decreased the possibility of the teacher serving as a cue for appropriate behavior by walking to the students.

To avoid contamination due to an interruption in peer interaction the teacher was instructed not to separate the target Ss from the peers that they ordinarily sat beside. However, as a precautionary measure a double baseline (A_1A_2B. . .) was employed to monitor target Ss' behavior both before and following the seating arrangement.

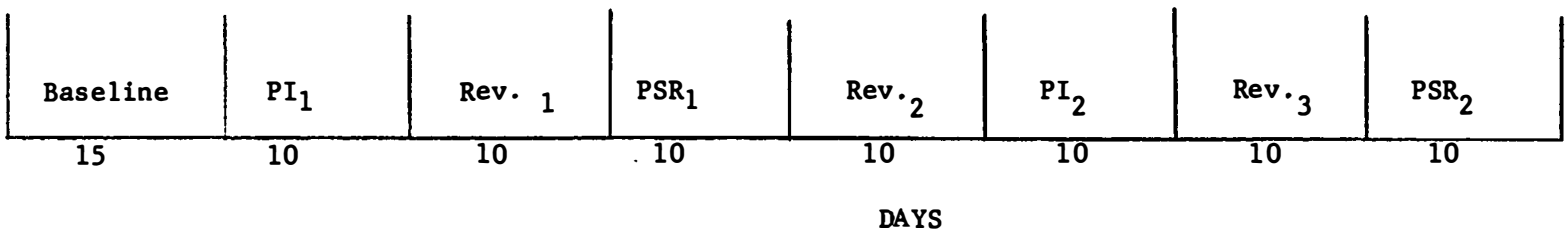
The observers were placed in the classroom one week prior to the collection of baseline data to partially curtail the novelty

of their presence. During the base period the teacher was asked to handle the students as she normally would. No attempt was made to influence her behavior.

After observers had collected baseline data, the teacher read: (1) "General Guidelines for Conducting Behavior Modification Programs in Public School Settings", (Grieger, Mordock, & Breyer, 1970); (2) "Classroom Punishment: A New Look", (Clarizio, 1972); a book on the principles of social reinforcement which provided her with the rationale for the procedures introduced in her classes (Mecham, Weisem, 1969).

Instruction for the PI condition began at the end of the baseline period for Class A. Instruction for the PSR condition was initiated at the beginning of the first reversal phase for Class A, which corresponded to the end of the baseline period for Class B. (See Appendix B for teacher training instructions). The two treatments were alternately reinstituted, one at a time in each class, and the effects on target Ss' behavior observed. Except for baseline condition, each experimental phase lasted for 10 days (see flow chart: Figure 2). The duration of each phase (10 days) synchronized all treatment conditions in one class with all reversal phases in the other. This permitted the teacher to apply only one treatment at a time during all phases of the study and thus minimized confusion in implementing treatments.

Class A



Class B

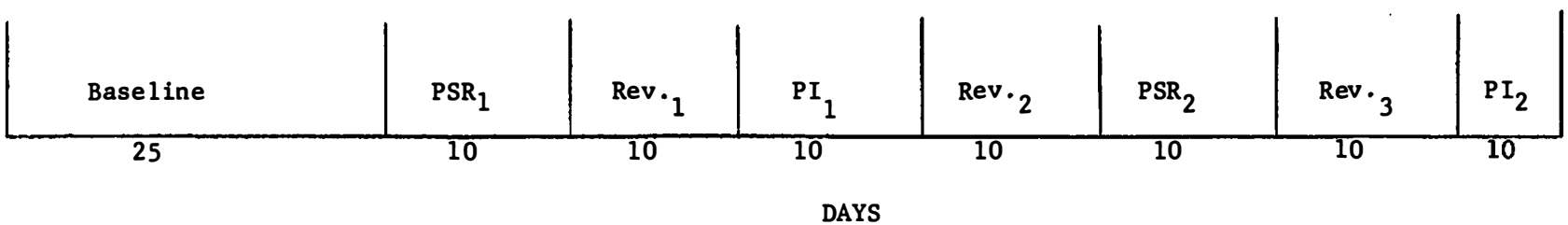


Figure 2. Delineation of experimental conditions in Class A and Class B

Teacher Feedback and Reactions

The E had frequent conferences with the teacher in which he praised her for the changes noted in her behavior during the various experimental phases. The conferences involved providing the teacher with a success frequency and a failure frequency. The success frequency was the number of daily one minute intervals in which she had responded appropriately. The failure frequency was the number of one minute intervals that she failed to attend to when the students were engaged in appropriate or inappropriate behavior. That is, the number of intervals when the S emitted a majority of appropriate behaviors during PI sessions but was not praised and the number of intervals that were not attended to during PSR sessions. Neither were discussed during baseline or reversal.

The teacher was interviewed one day after the study terminated concerning her reactions to the two approaches. The questions posed to the teacher by the E and a verbatim transcript of the teacher's evaluations of the two approaches (PI & PSR) appear in Appendix C.

The questions placed emphasis on what strategies the teacher had been employing prior to the study, and her appraisal of the two approaches in terms of their efficacy and ease of implementation.

CHAPTER III

RESULTS

For the purposes of clarity and simplicity, multiple behavioral categories were combined. Motor (M), noise making (N), verbalizations (V), and aggression (A) were analyzed collectively under the category of disruptive behavior. Task relevant (TR) and social behaviors (S) were designated collectively as appropriate behavior. Time-off-task remained a separate category.

The subsequent analysis placed major emphasis on the relative efficacy of the two behavioral management strategies under study, and their functional relationship to the three dependent behaviors. The rates of behavior were presented graphically (line graphs) and/or in tabular form. The resulting data indicated behavioral changes during the various experimental phases of the study. The data were analyzed descriptively, and where applicable, nonparametric statistical tests were performed to determine the statistical significance of the resulting comparisons.

Also for the purpose of expediency, the data for the above stated dependent variable were viewed from three planes. The resulting three categories of data were: (a) combined classes data, (b) inter-intra class(es) data, and (c) single subject data.

Combined Classes Analysis

Qualitative Descriptive Analysis

Prior to the entrance of observers into the classrooms, the E observed the target Ss for three days and substantuated the teacher's nominees for the study. The subsequent introduction of observers into the experimental setting prior to the study appeared not to affect the behavior of the target Ss in that a high degree of disruptive behavior was maintained.

The three Ss in each class appeared to be "buddies". Also, observance of other ecological occurrences indicated that they interacted with each other more often than with other students. In fact, they appeared to be competing with each other for attention.

Though no students had been assigned seats, two of the target Ss in both classes voluntarily seated themselves next to each other. The remaining two Ss in each class (one in each class) sat in close proximity to their fellow classroom disruptors. During the sixth day of baseline conditions the teacher assigned permanent seats to all students. However, no appreciable change in the degree of disruptive behavior could be ascertained following the seating arrangement.

Some Ss moved freely about the room and talked incessantly. They yelled at one another, and were frequently observed throwing "spit balls" and other objects at each other, other students, and the teacher. On two occasions two of the Ss became involved in physical fights with each other. The teacher's threats and

reprimands appeared to have no effect in reducing the level of disruption. When they were not behaving disruptively the Ss often resorted to idle behavior, i.e., they would sit passively in their seats or read comics, magazines, and other non-lesson oriented materials. Though the observers were not told what the study was about, some of them reported that they could see changes in the level of disruptive behaviors during the study.

Quantitative Descriptive Analysis

For the quantitative analysis the observational data for all target Ss for each observational session were combined and averaged for identical phases. Thus, the six baserate sessions, twelve PSR sessions, nine reversal sessions following PSR, twelve PI sessions and nine reversals following PI conditions were each treated as single experimental conditions. The resulting data were illustrated in both tabular and graphic form. Discrete curves representing the average percentages of the three behavioral categories for each observational session appear in Figure 3. The mean percentage rates for appropriate, time-off-task, and disruptive behaviors are presented in Table 1.

In general, although some differences were obscured due to combining the data, the data indicated that the behavior was under experimental control during experimental manipulations. Further, the orderly change in behavior concurrent with the implementation and withdrawal of treatments, indicated that treatment applications were responsible for the behavioral change.

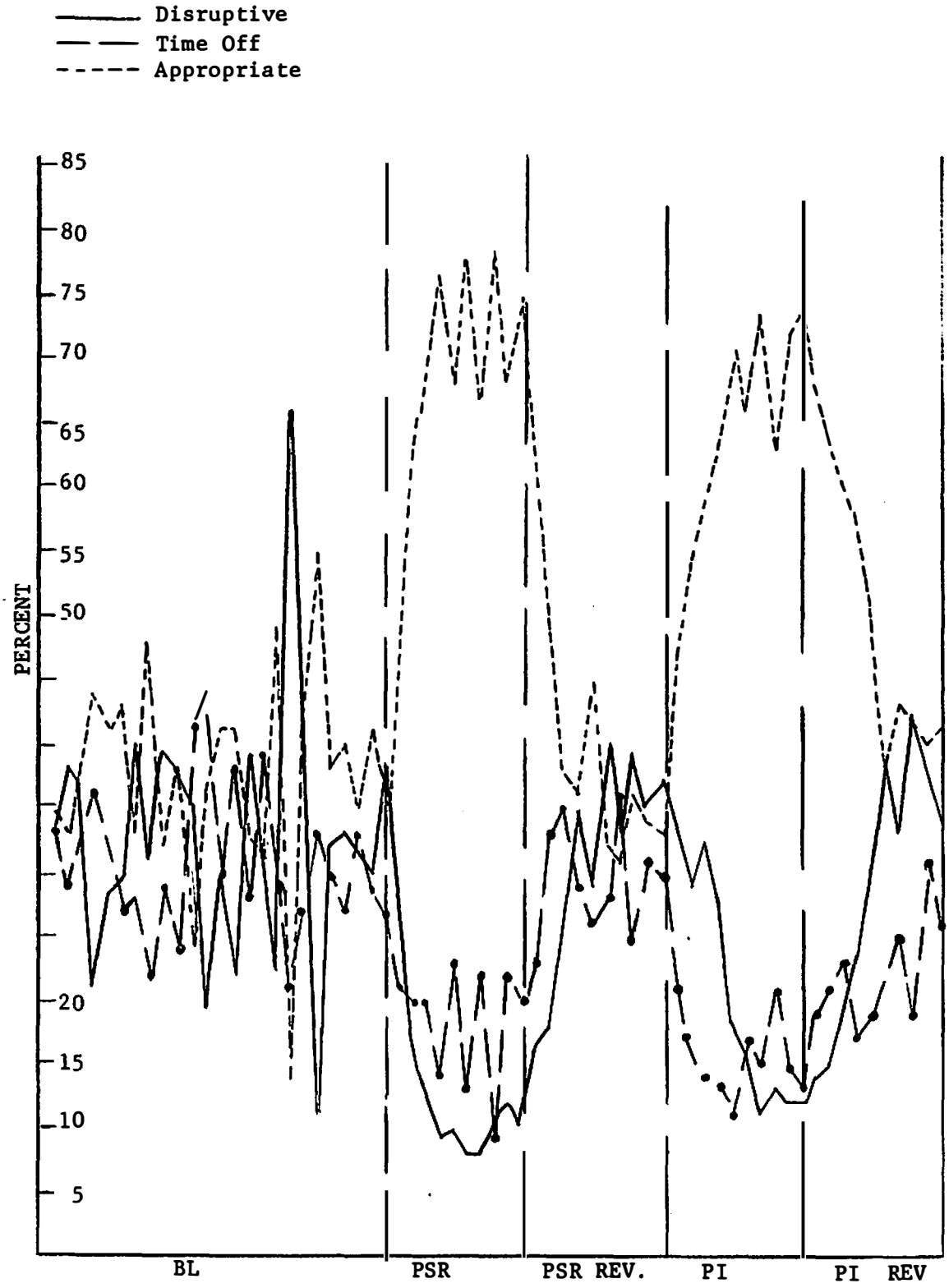


Figure 3. Percent of Target Behaviors during each phase for classes A and B combined.

TABLE 1

Mean Percentage Rates for Class A and Class B for Combined Phases

Behavior	BL_1	BL_2	Combined BL	PSR	Rev. following PSR	PI	Rev. following PI
Appropriate	37.50	35.34	36.33	69.14	39.41	64.55	50.38
Time-Off Task	31.63	30.49	30.72	18.75	29.92	15.63	22.44
Disruptive	30.86	34.15	33.08	12.11	30.80	20.45	27.44

Analysis of mean rates. As indicated in Table 1, the group achieved the lowest mean rate of disruptive behavior, and the highest mean rate of appropriate behavior during the PSR phases. However, there were only slight differences in these behaviors during the PSR and PI conditions. For examples, appropriate behavior was only four percent higher in the PSR phase. In addition, it should be noted that time-off-task behavior was slightly lower for the PI conditions than for the PSR conditions.

A broader view of the tabular data showed both treatment applications to be superior to baseline conditions in producing the desired behaviors. Similar rates of appropriate and disruptive behaviors were observed during baseline (37% and 33%, respectively). However, the introduction of the PSR contingencies resulted in a 21% decrease of disruptive behavior to a level approximately one-third of the rate occurring at baseline. A concomitant 33% increase in the rate of appropriate behavior to a level only three percentage points short of doubling that for baseline was also observed. In addition, the difference between the mean rates for the two behavioral categories shifted from three percentage points during baseline to a difference of 56 percentage points during the PSR conditions. Table 1 also shows that the introduction of the PI contingencies produced dramatic changes in behavior similar to those that occurred during PSR conditions. Disruptive behavior was reduced 13% to a level approximately two-thirds of that existing during baseline. Conversely,

appropriate behavior increased 29% to a level only seven percentage points short of doubling the rate for baselines. Again the difference between the two behavioral categories was much higher for the treatment phases (45 percentage points) than for baselines (three percentage points).

A comparison of the treatment phases (PSR and PI) with their respective reversal phases indicated an inverse relationship. The mean rate for appropriate behavior for the PSR conditions decreased 30 percentage points during reversal phases, while disruptive behavior increased 19 percentage points. Likewise, the mean rate for appropriate behavior decreased 15 percentage points during withdrawal of treatment following the PI conditions, while disruptive behavior increased seven percentage points.

A comparison of the mean rates between reversal phases indicated that less extinction of desired behaviors occurred during the reversals following the PI conditions. The mean percentage rate for appropriate behavior was 50% for the reversals following PI conditions, in contrast with a rate of 39% for reversals following PSR conditions, i.e., appropriate behavior declined 15 percentage points during withdrawal following the PI conditions and 30 percentage points during withdrawal following the PSR conditions. Conversely, disruptive behavior was 27% for the PI reversals as opposed to 31% for the PSR reversals, i.e., disruptive behavior increased only seven percentage points during the withdrawal of treatment following PI conditions, while it increased 19 percentage points during the reversals following

PSR conditions. However, as the data show, neither appropriate nor disruptive behaviors under reversals returned to the levels that existed during baselines.

The results also indicated that time-off-task behaviors peaked at baselines and reversals following PSR conditions, and was consistently lower for the remaining three experimental conditions. In comparison with baselines these behaviors declined 12 percentage points during PSR conditions and 15 percentage points during PI conditions (a difference between the two of three percentage points). The difference between the two reversal phases for this behavioral category was eight percentage points.

Analysis of variability. An inspection of the variability of the graphic data indicated wide fluctuations in behavior under baseline. During this phase the data ranged from 11% to 66% disruptive, and from 14% to 55% appropriate. However, as subsequent treatments were applied, the curves peaked and showed a flattening effect, i.e., during the PSR condition the behavior ranged from eight to 25% disruptive and from 49% to 79% appropriate. But once the low disruptive and high appropriate levels were achieved (about the fourth day), variability did not exceed three percentage points and 17 percentage points for the respective behavioral categories. During the PI conditions, the behavior ranged from 11% to 33% disruptive, and from 47% to 74% appropriate. However, again once the high levels of desired behavior were achieved, the variability did not exceed seven and 11 percentage points for the respective behavior categories.

Rapidity of effect. As mentioned previously, the PSR conditions produced less disruptive (approximately 8%) and more appropriate behaviors (approximately 4%) than did the PI conditions. Also, the mean rates indicated that extinction of the desired behaviors occurred less rapidly under the reversals following the PI conditions than under the reversals following PSR conditions. To probe the reasons for the above observed phenomena, an analysis was made of the curves in Figure 3, page 22.

An examination of the curves revealed a more rapid change in behavior during the initial days of the PSR conditions in comparison with the PI conditions, i.e., a more rapid rate of deceleration in disruptive behavior concomitant with a more rapid rate of acceleration of appropriate behavior was observed under the PSR conditions. The graphic data also indicated a less rapid increment in disruptive behavior and decrement in appropriate behavior during the initial days of the reversals following the PI conditions.

In addition to the graphic analyses, indexes of the relative change in rate of disruptive behavior were computed for the first three days and last three days of each phase. The change in rate was defined as the algebraic sums of the interval differences between data points during the first three days and last three days of each phase (White, 1971). The last day of reversals or baselines were used as a reference points for the treatment phases. The last day of treatment phases were used as reference points

for reversal phases. The results for the treatment phases are presented in Table 2.

As can be seen, the index for the PSR condition was higher during the first three days in comparison with the PI conditions (41 and 21 respectively). However, a reversal in effect occurred during the last three days of treatments. I.e., the index for the PI condition was higher during the last three days of treatment in contrast with the PSR condition (49:PSR, 60; PI). Also, the change in rate indexes for the reversals following PI conditions were lower during both the initial and latter days in comparison with the PSR withdrawals (see Table 3). In summary, the level of diminution in disruptive behavior during the first three days of treatments indicated that it took less time to produce behavioral changes during the PSR sessions by comparison with the PI phases. Also, the data indicate that less time was required for behaviors to extinguish during PSR withdrawal in contrast with PI reversals.

Statistical Analysis

As a follow-up to the above descriptive analyses, nonparametric statistics were used to determine if some of the observed differences were significant. This was made possible by averaging identical phases for each S and collapsing the results across classes.

TABLE 2

Index of Change in Rate of Behavior for PSR and PI Phases for Each Subject

	Amount of Change for First Three Days Conditions		Amount of Change for Last Three Days Conditions	
Subjects	PI Reversals	PSR Reversals	PI Reversals	PSR Reversals
S_1	+18	+75	+72	+75
S_2	+16	+35	+64	+34
S_3	+23	+48	+70	+43
S_4	+12	+24	+37	+32
S_5	+35	+43	+50	+77
S_6	+22	+20	+65	+32
Average Amount of Change Index	+21	+41	+60	+49

TABLE 3

Index of Change in Rate of Behavior for Reversal Phases

Subjects	Amount of Change for First Three Days Conditions		Amount of Change for Last Three Days Conditions	
	PI Reversals	PSR Reversals	PI Reversals	PSR Reversals
S_1	+18	-13	+62	+27
S_2	+23	+10	+55	+13
S_3	+11	+ 7	+46	+27
S_4	+14	+15	0	+52
S_5	+15	+61	+35	+50
S_6	-13	+37	+10	+72
Average Amount of Change Index	+11	+20	+35	+40

Comparison of subbaselines. Since the seating arrangements were altered on the sixth day of baseline the Wilcoxon Matched-Pairs Signed Ranks Test was used to test the significance of the difference between the two subbaselines. The results indicated that for N=6, the data obtained T of 4 was not significant at the .05 level of significance.

Comparison of experimental conditions. Two Friedman Two-Way Analysis of Variance by Ranks tests (Siegel, 1956, pp. 166-172) were computed for the mean percentage rates of disruptive and appropriate behaviors across baselines, reversals, PI, and PSR conditions. The results for both text (X_1^2 = .001) substantuated differences among the four experimental conditions.

Wilcoxon Signed Ranks Tests were used to probe specific differences among conditions. The results of the comparison for the two behavioral categories appear in Table 4 and Table 5. The results for disruptive behavior indicated that a nonsignificant effect was obtained between baselines and reversal conditions (see Table 4). The PI and PSR conditions were both statistically superior (P=.05) to baselines as well as reversal conditions. The results for the major dependent variable showed that the PSR conditions was statistically superior to the PI conditions. The results can be summarized as follows: PSR > PI > reversals = baselines.

The results for appropriate behavior showed a significant difference (p = .05) between baselines and reversals. (see Table 5).

TABLE 4

Results of the Wilcoxon - Matched - Pairs Signed Ranks Test

for Disruptive Behavior

Two-by-Two Treatment Comparison	T	Level of Confidence	Statistically Superior Treatment[a]
Baseline x Reversals	4	NS[b]	Neither
Baseline x Praise - Ignore	0	.05	Praise-Ignore
Baseline x Praise - Soft Reprimands	0	.05	Praise-Soft Reprimands
Reversals x Praise - Ignore	0	.05	Praise - Ignore
Reversals x Praise - Soft Reprimands	0	.05	Praise - Soft Reprimands
Praise - Ignore x Praise - Soft Reprimands	0	.05	Praise - Soft Reprimands

[a]Condition with the lowest percent of disruptive behavior.

[b]NS = Not Significant.

TABLE 5

Results of the Wilcoxon - Matched - Pairs - Signed Ranks Test

for Appropriate Behavior

Two-by-Two Treatment Comparison	T	Level of Confidence	Statistically Superior Treatment[a]
Baseline x Reversals	0	.05	Reversals
Baseline x Praise Ignore	0	.05	Praise-Ignore
Baseline x Praise-Soft Reprimands	0	.05	Praise-Soft Reprimand
Reversals x Praise-Ignore	0	.05	Praise-Ignore
Reversals x Praise-Soft Reprimands	0	.05	Praise-Soft Reprimand
Praise-Ignore x Praise-Soft Reprimands	3	NS[b]	Neither

[a]Condition with the highest percent of disruptive behavior

[b]NS = Not Significant

Also, the PI and PSR conditions were shown to be statistically superior to baselines and reversals. However, a nonsignificant effect was found between the two treatment conditions for appropriate behaviors. The results can be summarized as follows: PSR = PI, PI and PSR > reversals > baselines.

It must be pointed out, however, that neither the Friedman nor Wilcoxon tests take into account the magnitude of differences between conditions. Therefore, the slightest differences will yield significance, assuming that the differences appear in an orderly, generally consistent manner across rows. Thus, the negligible differences between some of the means used in the above comparisons which resulted in significant effects should be viewed with caution in interpreting the results.

Inter-Intra Class(es) Analysis

The results for each class are depicted in Figure 4 and Table 6. The data show that as the treatments were alternately implemented in one class, reversals were simultaneously in effect in the other. Despite this staggering of treatments the data showed that the treatments had similar effects in the two classes. Examination of identical treatment phases in each class also indicated a gradual decrease in disruptive behavior and a progressive increase in appropriate behavior as the similar treatments were alternately implemented. Since the treatments were implemented in reverse order in each class, this indicated a nonsequential effect.

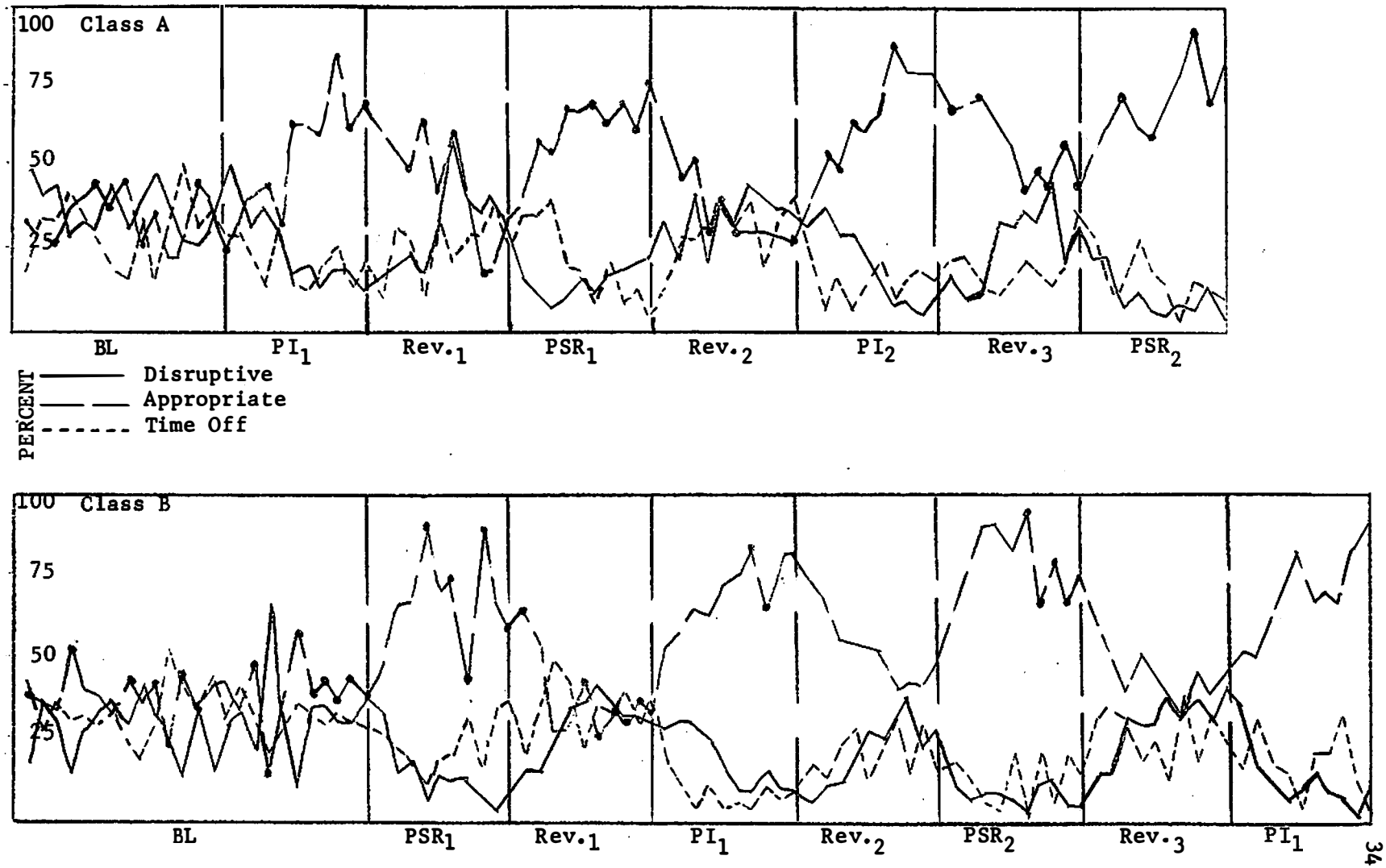


Figure 4. Percent of target behaviors during each experimental phase in classes A and B.

TABLE 6

Mean Percentage Rates for Class A and Class B for Each Phase

Behavior	Conditions							
Class A	Baseline	PI_1	$Rev._1$	PSR_1	$Rev._2$	PI_2	$Rev._3$	PSR_2
Appropriate	33.19	56.13	41.31	62.91	37.60	63.91	54.86	69.90
Time-Off-Task	29.45	20.96	26.62	20.87	27.01	14.91	19.33	18.03
Disruptive	37.35	23.89	32.06	16.11	35.37	21.16	25.97	12.06
Class B	Baseline	PSR_1	$Rev._1$	PI_1	$Rev._2$	PSR_2	$Rev._3$	PI_2
Appropriate	38.85	66.25	36.17	68.88	55.70	76.24	44.11	69.09
Time-Off-Task	32.05	22.36	33.54	10.20	21.19	13.74	29.38	17.14
Disruptive	29.16	11.37	30.27	20.69	23.08	9.72	26.66	13.74

Analogous to the combined group data, less extinction of desirable behaviors also occurred in each class during the reversal phases following PI conditions than during the PSR withdrawals.

As can be seen, in comparison with the PI conditions, the PSR conditions were moderately more effective in achieving less disruptive behavior in both classes. However, the results for appropriate behavior indicated a mixed pattern, i.e., both the PI and PSR conditions produced more appropriate behavior during the replication phases than during the initial treatment applications.

Further comparison of the two classes indicated that consistently lower rates of disruptive and higher rates of appropriate behaviors occurred in Class B. However, initial baseline differences (9 points for disruptive and 6 points for appropriate behavior) were present and may partially account for this observed result. In summary, the analyses indicated that there were moderate but consistent differences between like and non-like treatment conditions within and between the classes.

Individual Subject Analysis

Overview

This phase of the analysis describes the behavior of individual Ss under the various experimental conditions. Discrete line graphs were used in formulating the results. The line graphs illustrate the percentage of ten-second intervals in which appropriate, disruptive and time-off-task behaviors occurred per session. Tabular

data were presented to illustrate the mean percentage rates of the three behavioral categories for the six Ss.

In general, although the PSR conditions produced slightly greater changes in behavior than the PI conditions, differential effects were noted among Ss. For example, though both the PSR and PI contingencies consistently produced lower levels of disruptive behavior for all six Ss, the approaches were more effective for some than for others. Also, though both approaches reliably produced increases in appropriate behaviors for all Ss., they were not equally effective with the various Ss. An inverse relationship of the two behavioral categories during the four treatment and their three respective reversal phases is also indicated for each subject. In addition, compared to baseline, behavior was found to be less eratic under treatments and reversals.

With one exception disruptive behavior increased during reversal phases, but the increase was greater for the PSR withdrawals than for the reversals following PI conditions. Also, appropriate behavior decreased more sharply during PSR withdrawals than with PI reversals.

S_1:

S_1 was a 15 year old white male with a DIQ of 102 on the Otis Lennon Mental Ability Test. During the baseline, the teacher described him as a very talkative student who refused to stay in his seat. He would walk around the room and frequently was observed chasing and making aggressive advances toward female students. On

two occasions he was involved in fist fights with target S_2. The teacher said that he was probably the most disruptive student in all five of her classes. He was a part of an in-class clique with the other two targets in the class, and they interacted with each other at almost every opportunity. He often acted as a leader for S_2 and S_3 and was labeled as the "ring leader" by the teacher. He exhibited very weak study habits which compounded the behavior problems.

Figure 5 and Table 7 illustrate the percent of appropriate, time-off-task, and disruptive behavior emitted by S_1 during each phase. He differed most markedly from the Ss in both classes in the amount of undesirable behavior emitted throughout the study, i.e., of all the target Ss he emitted the highest percent of disruptive and the lowest percent of appropriate behavior under all experimental conditions. Also, the change in his behavior was less dramatic than that of the other targets. During baseline his mean rate of appropriate behavior was 19% lower than the group's while his disruptive behavior was 14% higher. His average for appropriate behavior during the two PI conditions (average: 45%) was 20% lower than the group's while disruptive behavior during these phases (average: 31%) was 11% higher. The average amount of appropriate behavior under the two PSR conditions (54%) was 15% lower than the combined classes average and disruptive behavior (average: 23%) was 11% higher. His behavior was also less orderly and more erratic during all phases than was the behavior of the

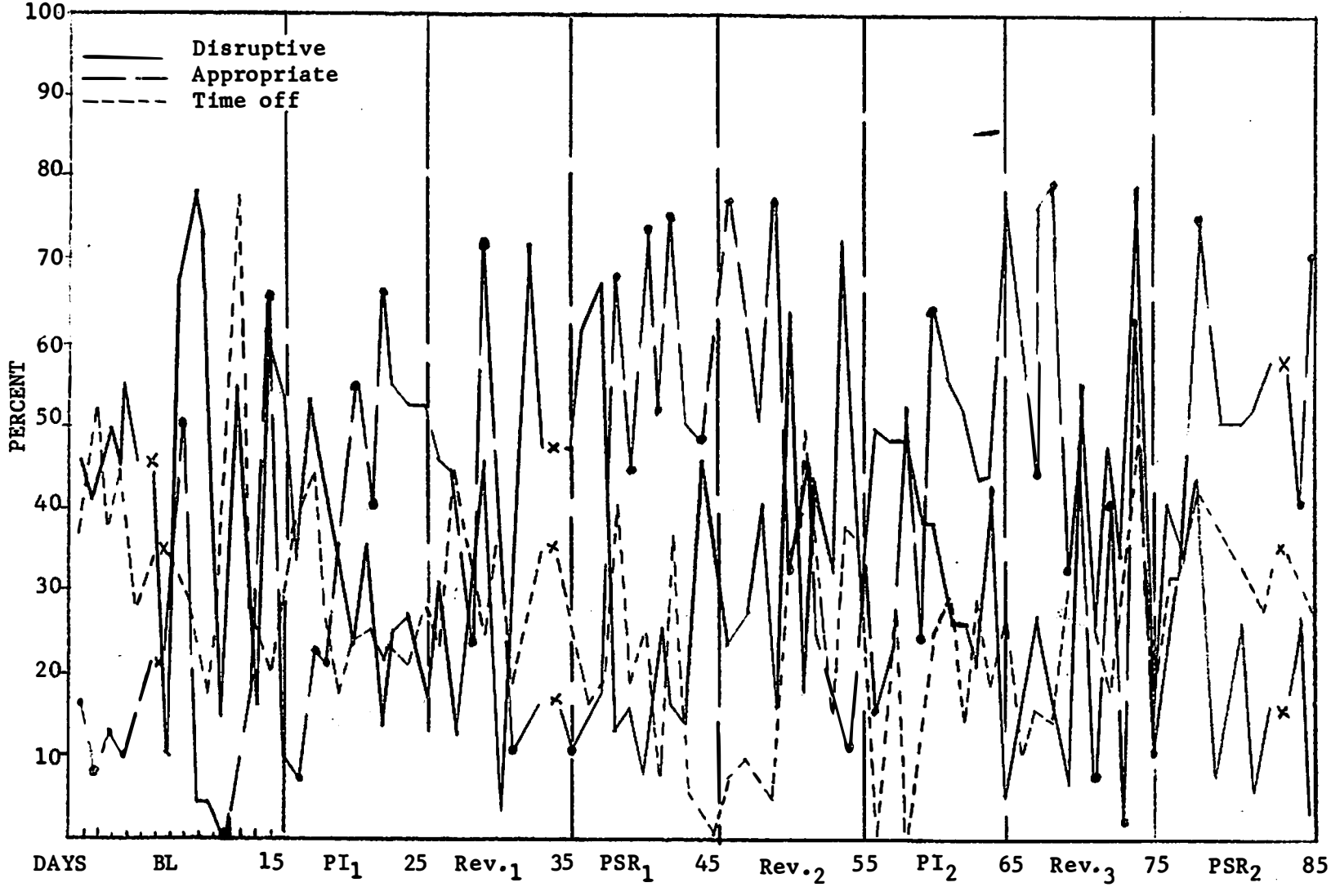


Figure 5. Percent of appropriate, time off, and disruptive behavior for S_1.

TABLE 7

S_1 Mean Percentage Rates for Each Phase

Behavior	Baseline	PI_1	$Rev._1$	PSR_1	$Rev._2$	PI_2	$Rev._3$	PSR_2
Appropriate	17.26	40.62	29.17	56.25	36.87	48.84	40.00	51.16
Time-Off-Task	35.68	26.66	31.94	17.29	24.16	22.45	25.93	28.70
Disruptive	47.02	32.71	38.89	26.46	38.95	28.70	34.16	20.14

other targets in each or both classes. The data showed him to be engaged in disruptive behavior during approximately half the time that he was being observed under baseline (47%). Also during this phase he emitted a great deal of time-off-task behavior (36%) while appropriate behavior comprised less than one-fifth of his behavior (17%).

His attention to appropriate tasks was substantually increased by an average of 28 percentage points from baseline to the PI conditions. Also, the PI contingencies produced a 16% decrease in disruptive behavior from baseline. However, the changes in behavior under the PSR conditions were more pronounced in that appropriate behavior increased 37% while disruptive behavior decreased 24%.

The trend for appropriate behavior throughout the entire treatment showed an increase for PI phases (PI_1: 41% to PI_2:49%). A decrease in appropriate behavior, however, was observed from PSR_1 to PSR_2 (56% to 51%). Meanwhile, the trend for disruptive behavior indicated a decrease as each like-phase was reinstituted. The trend for reversal phases indicated a substantial decrease in appropriate behavior and increase in disruptive behavior as the treatments were alternately withdrawn.

The initial high level of time-off-task behavior during baseline alternately decreased and increased with the implementation and withdrawal of treatments. However, an actual increase was noted from reversal three and PSR_2. Also, this behavioral category was relatively consistent between like phases, with the greatest inconsistency occurring between PSR phases.

S_2:

S_2, a white male, age 15, had a DIQ of 94 on the Otis Lennon Ability Test. He was chosen for the study because he was considered a particularly disruptive pupil who studied very little. The teacher referred to him as "a mischief little clown". The observers often referred to him as "Dennis the Menace". He sat next to S_3 and interacted with him and S_1 more often than he did with nontarget students. He talked incessantly and was frequently observed throwing "spit balls" and other objects. On occasions, he appeared to feign appropriate behavior until the teacher turned her back. He would also surreptiously read comics and other non-lesson materials by placing them under his desk.

The percent of the three behavioral categories under each phase for this S are presented in Figure 6, and Table 8. In comparison with the combined classes averages he ranked next to S_1 in the amount of undesirable behavior emitted during baseline, i.e., appropriate behavior was 10% less than the group's and disruptive behavior was 9% greater during this phase.

As can be seen, appropriate behavior increased an average of 36% from baseline during the PI phases, while disruptive behavior decreased by an average of 21%. However, the PSR contingencies produced even greater improvements in desirable behavior. During these phases appropriate behavior increased an average of 44% while disruptive behavior decreased an average of 29 percentage points.

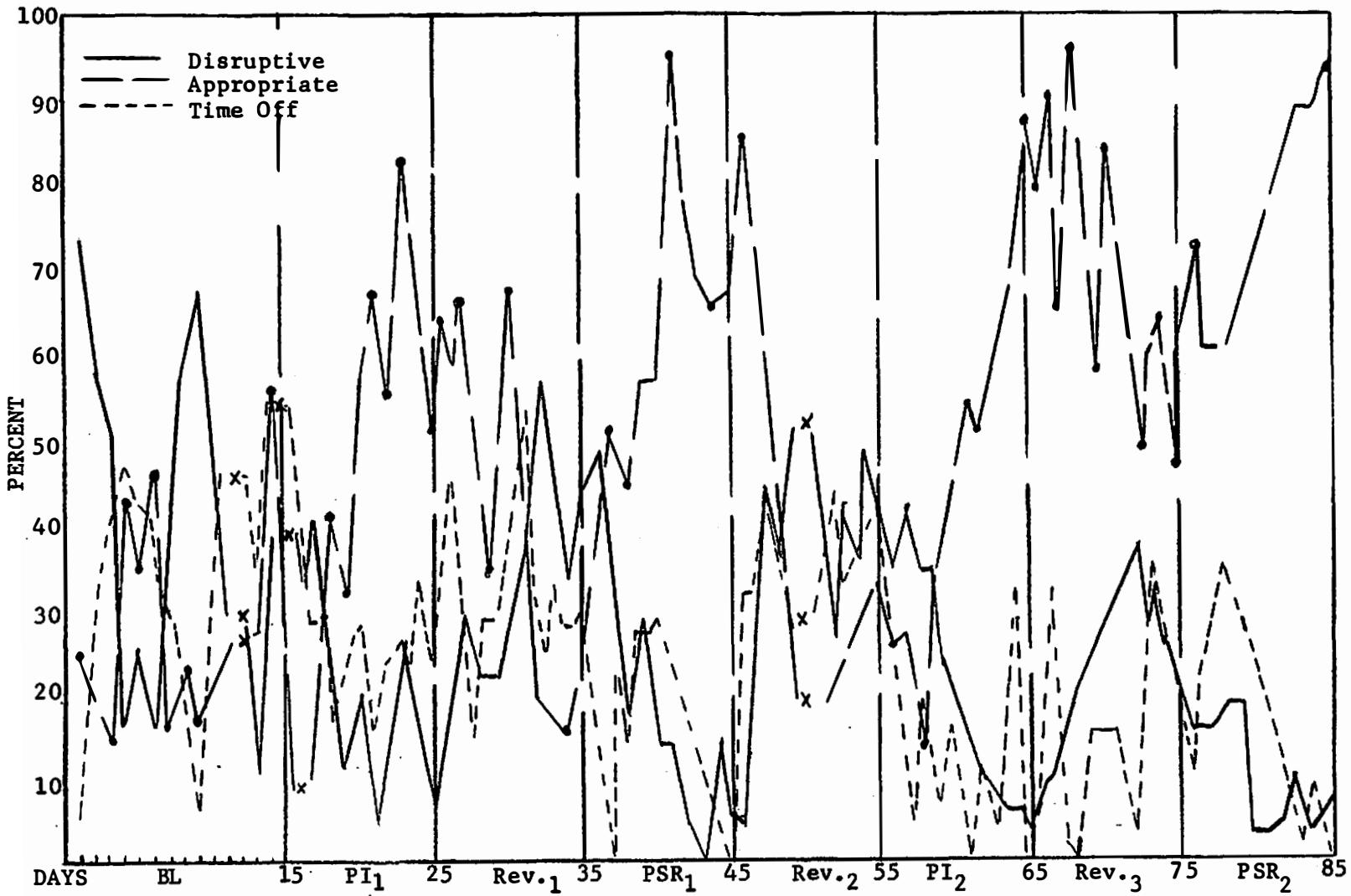


Figure 6. Percent of appropriate, time off, and disruptive behavior for $\underline{S}_2$.

TABLE 8

$\underline{S}_2$ Mean Percentage Rates for Each Phase

Behavior	Baseline	PI_1	$Rev._1$	PSR_1	$Rev._2$	PI_2	$Rev._3$	PSR_2
Appropriate	25.79	56.46	37.08	65.83	26.14	68.33	61.87	73.96
Time-Off Task	33.17	23.54	31.04	20.78	35.42	11.87	14.17	15.21
Disruptive	41.02	20.00	31.87	13.33	38.43	19.79	23.96	10.83

As the data depicts, appropriate behavior increased during the second implementation of both treatments. It should be noted, however, that the $\underline{PI}_2$ condition produced more appropriate behavior than the $\underline{PSR}_1$ condition. Also, the $\underline{PI}_1$ and $\underline{PI}_2$ conditions produced the same levels of disruptive behavior, while the $\underline{PSR}_2$ condition produced a slightly lower level of disruptive behavior than the $\underline{PSR}_1$ condition. In sum, appropriate behavior gradually increased during each successive treatment application of the same treatment while no clear trend was observed for disruptive behavior.

As shown in Figure 6, time-off-task behavior decreased sharply during all treatment phases. However, it returned to a level slightly below and slightly above baseline during reversals one and three, respectively.

$\underline{S}_3$:

$\underline{S}_3$, a white male, age 16, had a DIQ of 84 on the Otis Lennon Mental Ability Test. He was described by the teacher as having a low frustration tolerance, and his behavior was characterized as explosive. Though the relationship was reciprocal, the other two targets appeared to influence him more than he influenced them. He sat next to $\underline{S}_2$ and quite frequently verbally interacted with him.

Figure 7 and Table 9 present the percent of appropraite, disruptive, and time-off-task behaviors for this $\underline{S}$. The discrete lines in Figure 7 indicate that his behavior was more orderly and less erratic than the other targets in his class. In comparison

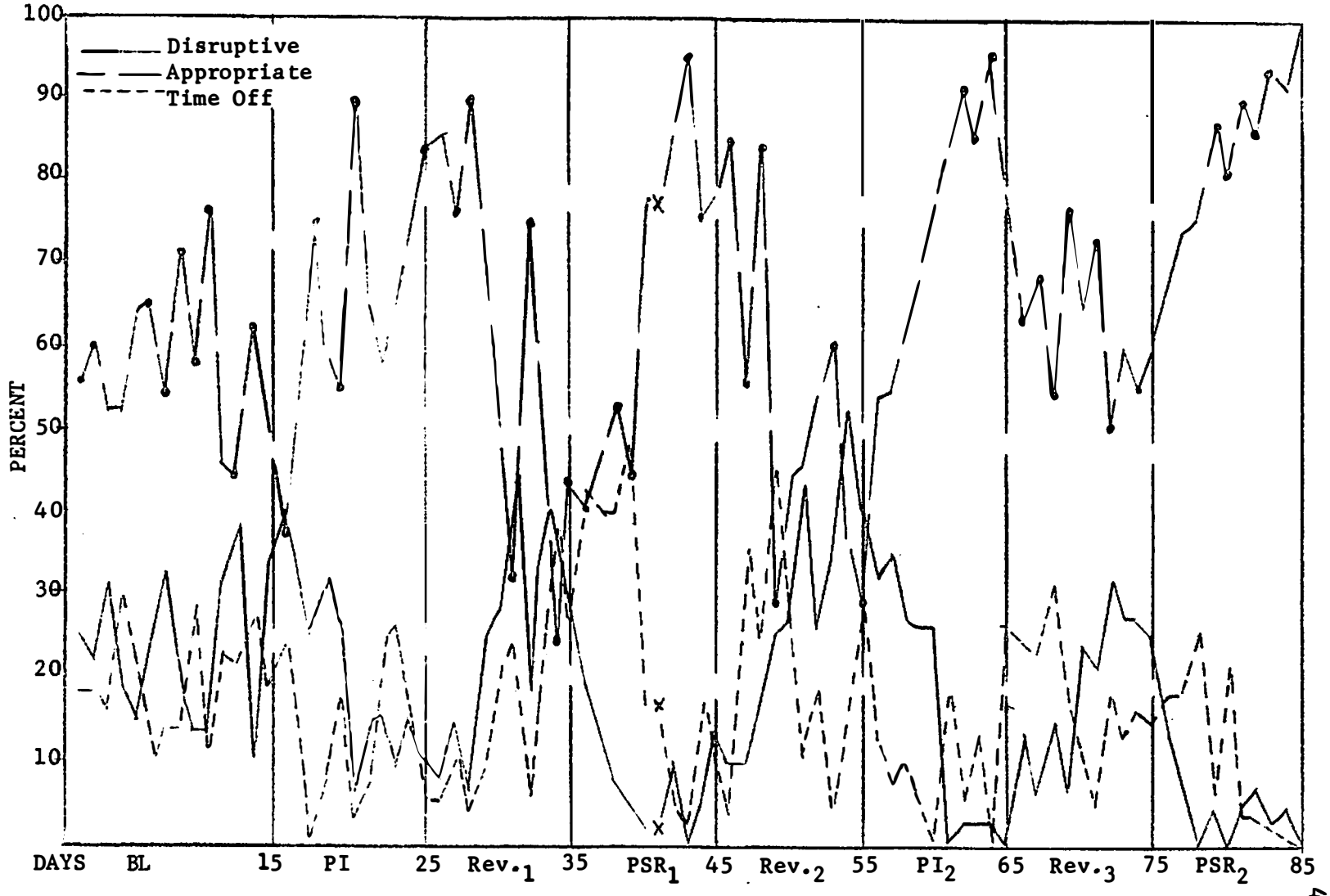


Figure 7. Percent of appropriate, time off, and disruptive behavior for $\underline{S}_3$.

TABLE 9

$\underline{S}_3$ Mean Percentage Rates for Each Phase

Behavior	Baseline	PI_1	$Rev._1$	PSR_1	$Rev._2$	PI_2	$Rev._3$	PSR_2
Appropriate	56.53	68.33	57.70	66.67	49.79	74.58	62.71	84.58
Time-Off-Task	19.48	12.70	16.88	24.54	21.46	10.42	17.50	10.20
Disruptive	24.02	18.96	25.42	8.56	28.75	15.00	19.79	5.21

with all target Ss, he exhibited the greates amount of appropriate behavior and next to the lowest amount of disruptive behavior during baseline. During this phase his attention to appropriate tasks was 21% higher than the combined group, while his level of disruptive behavior was 9% less.

The magnitude of the difference in appropriate behavior from baseline to the PI conditions was an average of 15 percentage points. The average difference in disruptive behavior between the same conditions was 7%. However a more pronounced effect was found for the PSR conditions which produced an average increase of 24% in appropriate behavior with a concomitant 17% decrease in disruptive behavior. It should be noted, however, that both PI_1 and PI_2 conditions produced slightly more appropriate behavior than the PSR_1 condition. Time-off-task behavior exceeded the baseline level during the PSR_1 and reversal two conditions and was consistently lower for the remaining phases.

S_4:

S_4, a white male, age 17, had a DIQ of 80 on Otis Lennon Mental Ability test. The teacher stated that the S had the capability to be a good student, but that his disruptive and inattentive behavior interferred with his class work. The S was typically not disrupted to the class but spent a great deal of his time talking to S_6, who was seated immediately behind him.

The results for S_4 are shown in Figure 8 and Table 10. As the data indicate, the S's behavior was similiar to that of S_3 under

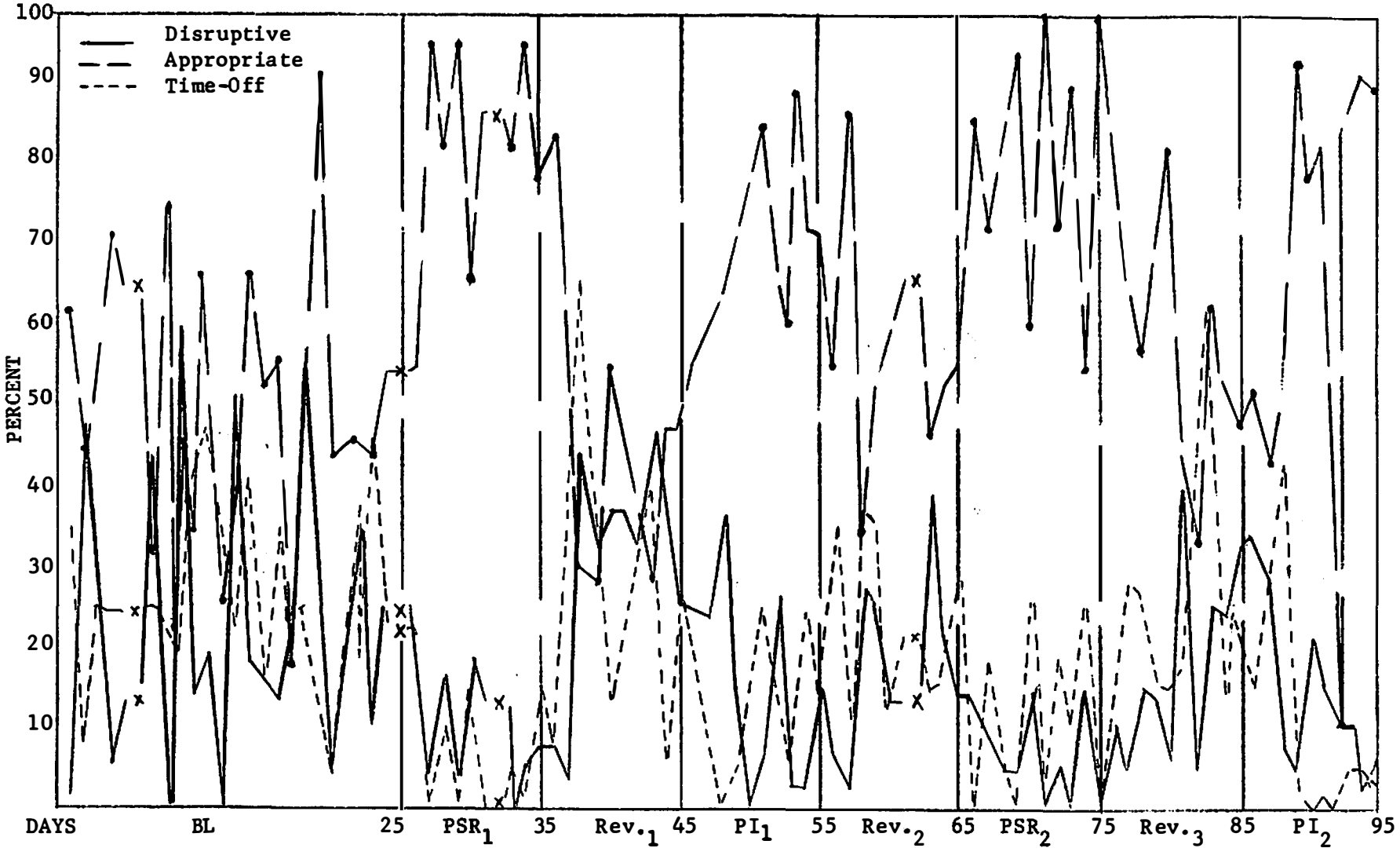


Figure 8. Percent of appropriate, time-off, and disruptive behavior for $\underline{S_4}$.

TABLE 10

S_4 Mean Percentage Rates for Each Phase

Behavior	Baseline	PSR_1	$Rev._1$	PI_1	$Rev._2$	PSR_2	$Rev._3$	PI_2
Appropriate	50.72	82.40	44.37	70.41	56.71	81.45	59.79	75.42
Time-Off-Task	26.45	7.86	27.92	13.54	23.61	10.62	22.92	10.62
Disruptive	22.83	9.72	27.71	15.42	19.67	7.71	17.29	13.96

baseline. In comparison with all targets the S emitted the least amount of disruptive behavior and second to the highest amount of appropriate behavior during baseline. During treatment phases the S consistently exhibited less disruptive behavior throughout the study in comparison with the group. Also, his appropriate behavior exceeded that of the group under all phases. As was true for the group, both treatment applications were successful in producing the desired effects, but again the praise soft reprimand contingences were slightly more efficatious in producing the desired behaviors.

Within each phase disruptive behavior attenuated slightly as the study progressed. The pattern for appropriate behavior indicated a slight increase for the successive PI phases while both PSR phases were functionally equivalent.

S_5:

S_5, a white male, age and IQ not shown in school record, exhibited a high degree of disruptive behavior; specifically, he refused to follow directions, talked constantly to other students, and habitually ignored the teacher. Figure 9 and Table 11 present the data for his behavior. Of all target subjects his behavior most closely approximates that of the group's and is very similar to that of S_6. He differed from the group in that both treatment applications were about equally effective in increasing appropriate behavior and reducing disruptive behavior. The PI_1 condition produced more appropriate behavior than the PSR_1 condition, while the

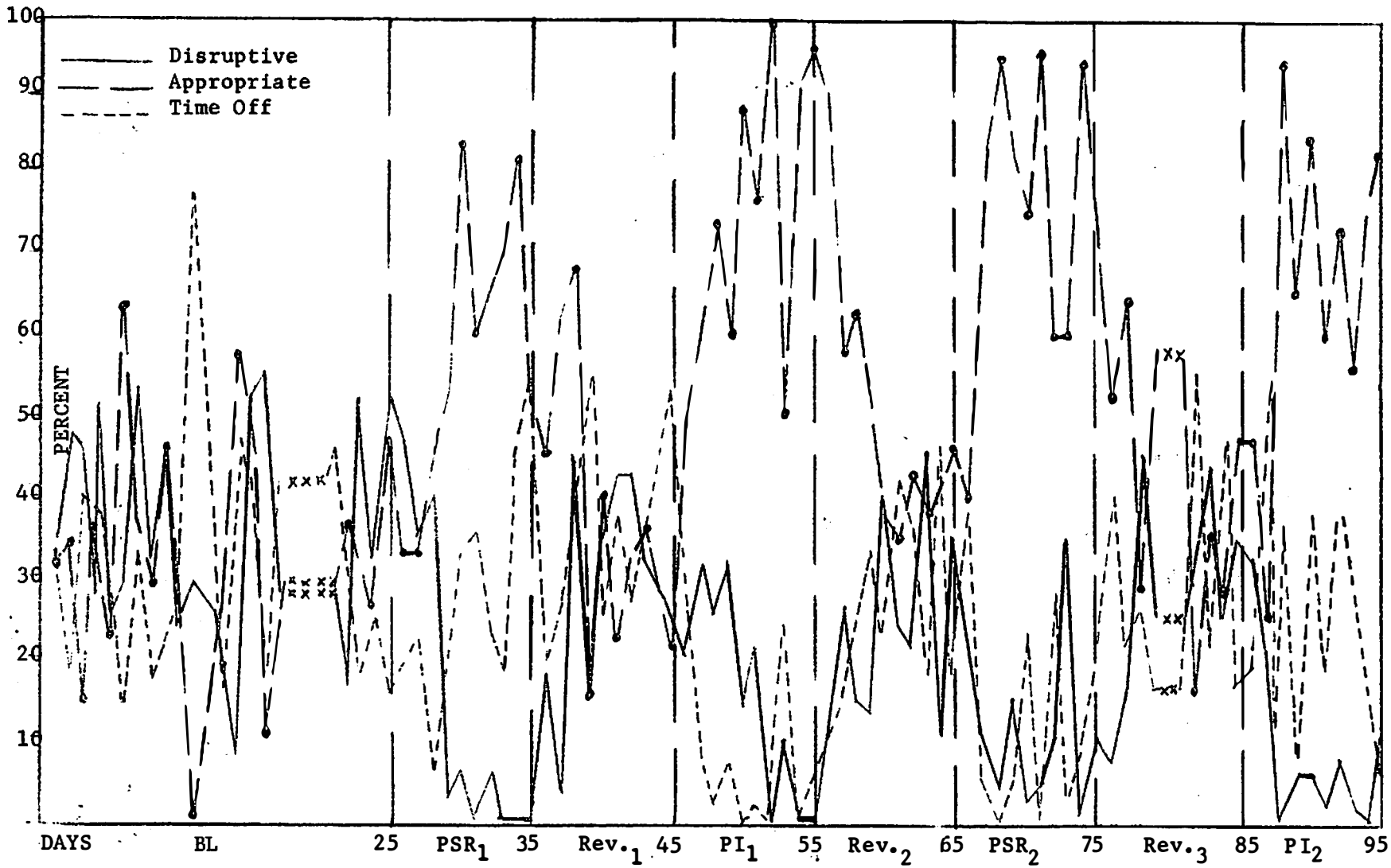


Figure 9. Percent of appropriate, time off, and disruptive behavior for $\underline{S}_5$.

TABLE 11

$\underline{S}_5$ Mean Percentage Rates for Each Phase

Behavior	Baseline	PSR_1	$Rev._1$	PI_1	$Rev._2$	PSR_2	$Rev._3$	PI_2
Appropriate	31.74	58.96	34.99	72.91	50.41	75.62	40.62	65.62
Time-Off-Task	31.44	27.29	35.62	9.37	26.66	13.12	30.47	25.62
Disruptive	36.80	13.74	29.37	17.71	22.91	11.25	28.90	8.75

converse was found for the $\underline{PI}_2$ and $\underline{PSR}_2$ conditions. Conversely, the $\underline{PSR}_1$ condition was more effective in reducing disruptive behavior than the $\underline{PI}_1$ condition, while the opposite effect was observed for the later two treatments.

Appropriate behavior increased from the $\underline{PSR}_1$ to the $\underline{PSR}_2$ conditions, but declined from the $\underline{PI}_1$ to the $\underline{PI}_2$ conditions. Disruptive behavior, however, decreased during the second implementation of both treatments. Also, the $\underline{PI}_1$ condition produced more appropriate behavior than the $\underline{PSR}_1$ condition, but was less effective during replication phases.

$\underline{S}_6$:

$\underline{S}_6$, also a white male, age 16, had a DIQ of 112 on the Otis Lennon Mental Ability Test. He sat behind $\underline{S}_4$ and near $\underline{S}_5$ and frequently interacted with them. Like $\underline{S}_4$, the teacher described $\underline{S}_6$ as very talkative. He would blurt out responses without asking permission and appeared to resent authority. He also spent a greatly amount of time reading nonlesson materials and playing with gadgets.

The findings for this $\underline{S}$ appear in Figure 10 and Table 12. Similar to those of $\underline{S}_5$, his behaviors during baseline were approximately evenly divided among the three behavioral categories. Also his behavior throughout the study was similar to that for the group. A comparison of the two treatment applications showed the $\underline{PSR}$ contingencies to be markedly more effective than the $\underline{PI}$ contingencies

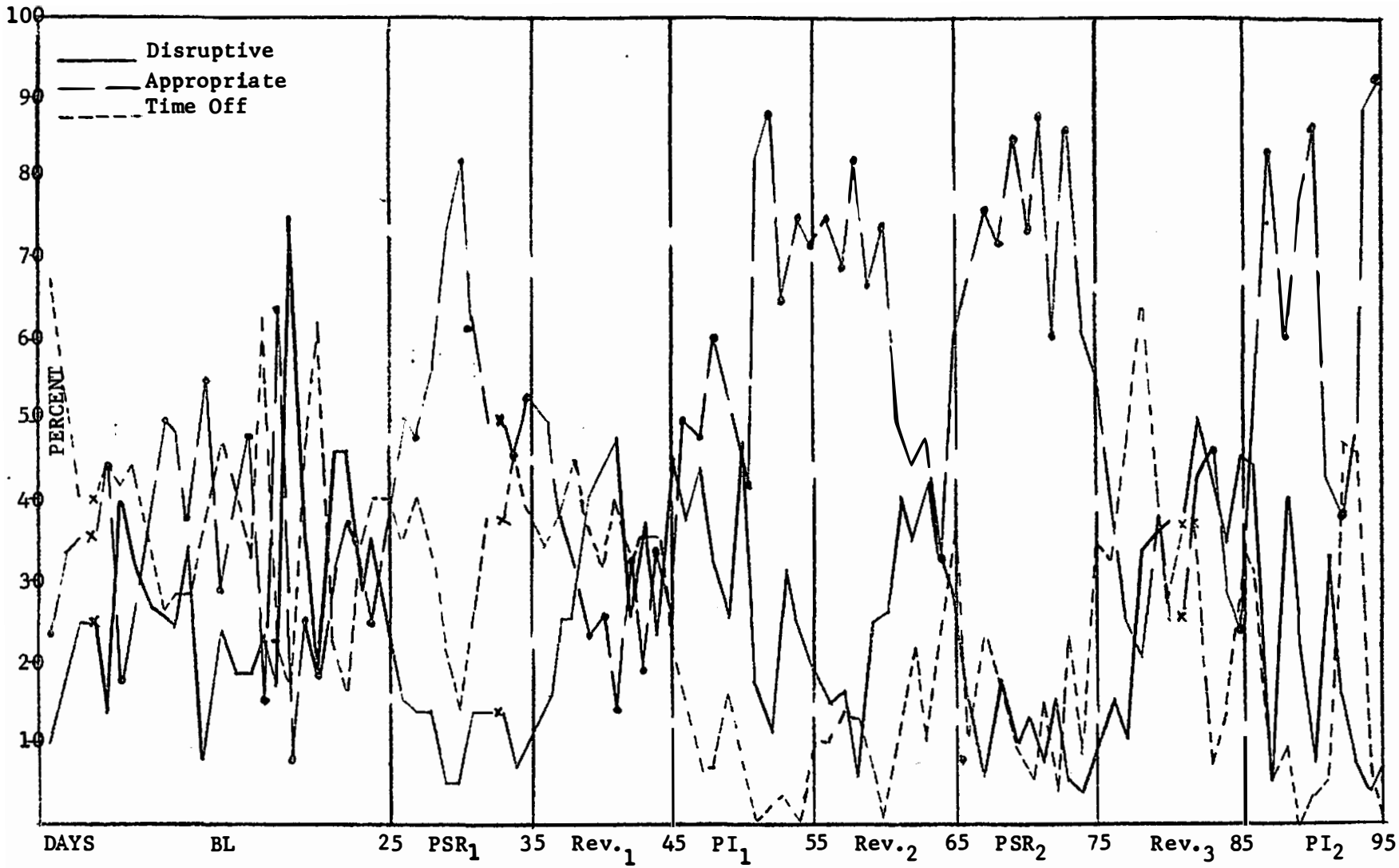


Figure 10. Percent of appropriate, time off, and disruptive behavior for S_6.

TABLE 12

S_6 Mean Percentage Rates for Each Phase

Behavior	Baseline	PSR_1	$Rev._1$	PI_1	$Rev._2$	PSR_2	$Rev._3$	PI_2
Appropriate	34.11	57.40	29.16	63.33	59.99	71.66	31.94	66.24
Time-Off Task	38.28	31.94	37.08	7.70	13.32	17.49	34.25	15.20
Disruptive	27.60	10.65	33.74	28.95	26.66	10.83	33.79	18.53

in reducing disruptive behavior. However, as was true for $\underline{S}_5$, the $\underline{PI}_1$ condition produced more appropriate behavior than the $\underline{PSR}_1$ condition, while the reverse effect occurred during replications. Time-off-task was relatively high during baseline, $\underline{PSR}_1$, reversal one, and reversal three, but declined sharply during the remaining phases. Also, an actual decline in disruptive behavior occurred during the $\underline{PI}_1$ withdrawal phase.

Teacher Behavior

Teacher behaviors were analyzed to see if the teacher followed instructions for implementing experimental contingencies. They were also examined to clarify relationships between changes in target students behaviors as a function of the frequency and type of teacher supplied social attention.

The teacher behaviors were recorded as she interacted with targets who were synchronously observed by student observers. In Table 13 a summary of the frequency of teacher behaviors directed toward all targets during each phase is presented. To elucidate more fully the interaction between Ss' behaviors and the teacher's behaviors, Figure 11 presents the percentage of teacher behaviors under each experimental condition in the lower panel and the percent of student behaviors in the upper panel. Data for all Ss were collapsed and identical phases were treated as single experimental conditions for both the graphic and tabular presentations. Also, the percentage of student behaviors as a function of teacher behaviors

TABLE 13

Frequency of Teacher Behaviors Directed Toward Target Subjects
During Each Phase for Class A and Class B Combined

Behavior	Baseline	PSR	PSR Reversals	PI	PI Reversals
Other Negative	54	2	37	2	32
Other Positive	3	2	3	14	5
Verbal Praise	3	116	1	107	1
Soft Reprimand	0	47	0	0	0
Total	60	167	41	123	38

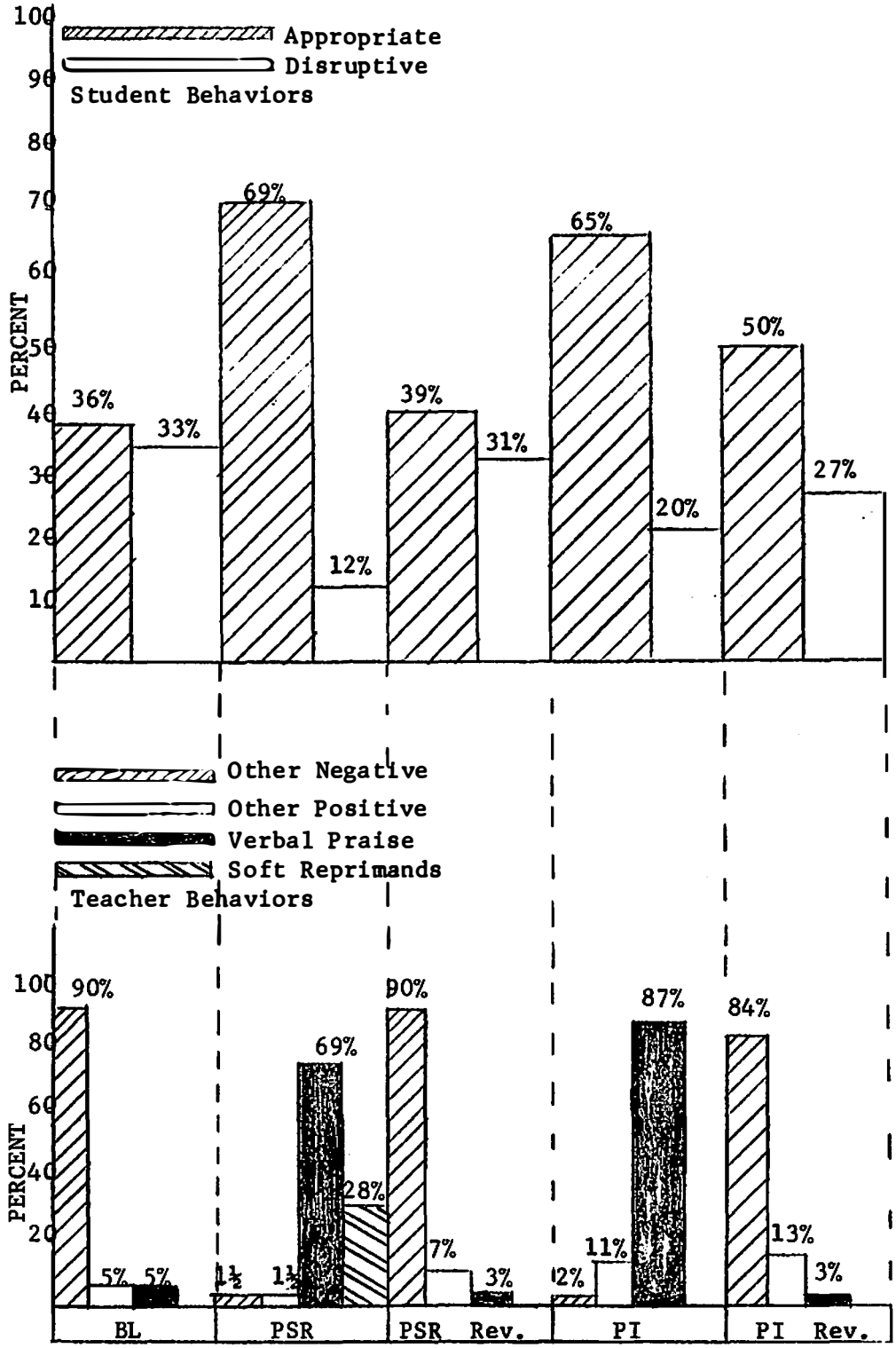


Figure 11. Percent of teacher behaviors and student behaviors under experimental phases for combined classes.

for each class appear in Figures A-1 and A-2 in Appendix D. Tables A-4 and A-5 in Appendix D present the frequency of teacher behaviors during each phase for each class.

Table 13 and Figure 11 indicate extreme changes in the teacher's behavior as the treatments were alternately instituted and withdrawn. Under baseline, the students were highly disruptive (36%), while the amount of appropriate behavior emitted was relatively low (33%). The teacher relied heavily on sharp verbal reproofs rather than positive forms of interaction to control the students' behaviors. During this phase, negative attention accounted for 90% of her interactions with targets, while positive attention comprised only 10% of her attention (OP: 5%; P: 5%).

The teacher sharply increased the total frequency of interactions with the targets from a frequency of 60 under baseline to a frequency of 167 during PSR phases. Also, she made a complete reversal in the kind of behavior emitted. Verbal praise shifted from a meager frequency of 3 during baseline to a frequency of 116 during this phase which accounted for 69% of her behavior. Conversely, other negative attention, which mainly involved loud verbal reprimands, decreased from a frequency of 54 during baseline to a frequency of 2 and comprised only 1.5% of her behavior. Soft reprimands, which were nonexistent under baseline, comprised 28% of the total 167 interactions for this phase. As depicted in Figure 11, the combined high levels of verbal praise and soft reprimands produced pronounced changes in the students' behaviors in the desired directions.

When the PSR contingencies were withdrawn the teacher reduced her total frequency of interactions with targets from 167 to 41. Also, the results indicate a reversal in the kind of teacher responses, i.e., other negative attention comprised 90% of the interactions. Examination of concurrent student behavior indicated that the reversal in teacher behaviors produced a concomitant reversal in student behaviors in that appropriate behavior sharply declined while disruptive behavior markedly increased.

As was true for the PSR phases, the teacher changed both the amount and kind of interactions during the PI phases in comparison with baseline. The total frequency of interactions increased from 60 to 123. During this phase, positive attention accounted for 98% of her behavior, 87% of which was in the form of verbal praise. As can be seen in Figure 11, the application of these contingencies concomitantly produced the desired changes in student behaviors.

As was the case for the PSR reversals, during the PI reversals the teacher returned to behaviors similar to those observed under baseline. The total frequency of interactions dropped from 123 during the PI phases to 38 during the PI reversals. The great majority of her behavior (84%) consisted of other negative attention. Concomitant with the PI reversals appropriate student behavior declined an average of 15 percentage points while disruptive behavior rose 7 percentage points.

Comparison of the data for the PSR and PI phases indicates that the total frequency of teacher interactions was much higher during the PSR phases primarily due to the addition of soft verbal reprimands. The number of verbal praise interactions was also slightly higher for the PSR phases. However, when other positive attention is included the frequency of positive attention is quite consistent between phases (PSR: 118; PI: 121). The number of other negative (ON) interactions were scant but consistent between phases. In addition, the frequency of other positive (OP) behaviors was substantially higher for the PI condition.

Comparison of the data for reversals following treatments indicates that the teacher dispensed slightly more loud reprimands during the PSR reversals than during the PI reversals. Other negative attention comprised 90% of her behavior during PSR reversal phases in contrast with 84% for the PI reversals. The percentage of other positive behavior was moderately higher during PI reversals (13%) in comparison with PSR withdrawals (7%).

In summary, it can be said that the results indicate quite clearly that the contingent social consequences applied by the teacher to the target behaviors achieved the aims of lowering disruptive and increasing appropriate behaviors. That the behaviors did, in fact, change in the desired directions is indicated in Figure 11. That contingent teacher attention was responsible for these changes in student behavior was established through the use of a multiple baseline with reversals design in which the target

behaviors alternately and consistently changed as treatments were applied and withdrawn.

CHAPTER IV

DISCUSSION

The present study involved an experimental analysis of behavior in which the relative efficacy of two behavioral management strategies and their functional relationship to three dependent behaviors (appropriate, time-off-task, and disruptive) were examined. While both strategies involved having the teacher verbally praise appropriate behaviors, they differed primarily in the manner in which she dealt with classroom disruptions. One strategy involved ignoring disruptive behaviors, while the other involved softly (privately) reprimanding such behaviors.

Both idiographic and differential approaches (White, 1971) were used to formulate the results, which depicted four major findings. First, both strategies consistently and dramatically produced high levels of appropriate and lower levels of disruptive behaviors than did the baselines and reversals. Second, a comparison of the two treatment approaches revealed that the PSR contingencies had a slightly greater impact on the behavior of the six targets than did the PI contingencies. Third, desirable behaviors extinguished more rapidly during the PSR withdrawals than during the PI withdrawals. Fourth, time-off-task behaviors were slightly higher during the PSR phases than during the PI phases. Such findings corroborate the findings of earlier studies (Cormier, 1970; McAllister, et al., 1969), which have demonstrated that a teacher's social behavior

can markedly influence the disruptive behavior of adolescents. The results further indicate that the manner in which a teacher delivers reproof is a major determinant of its effectiveness.

Though the differential results for the two approaches were negligible, two possible explanations might be offered to account for these differences. One explanation could be derived from the fact that the teacher's total frequency of interactions with targets was greater during the PSR sessions than during PI sessions. Thus, there is some possibility that the differential results were a consequence of increased attention to behavior per se, rather than a consequence of the kind of attention given. That is, the additional quantity rather than the quality of soft-reprimands produced the difference. However, a previous investigation (O'Leary et al., 1971), in which the exclusive use of soft reprimands was compared with loud reprimands supported the notion that the quality of the reprimands (public or private) was the determining factor. Other research has shown that increasining the quantity (frequency) of loud verbal reproofs increases disruptive behavior (Thomas, et al., 1968). These two studies cast serious doubt on the adequacy of the first explanation. In addition, a comparison of the low frequency of soft reprimands during PSR phases and the relatively high frequency of loud reprimands during reversals in the present study indicates that it was the manner in which the teacher dispensed reprimands rather than their number which accounted for the difference observed.

The second possible explanation, which is supported by the findings of the present study, involves the time required to produce behavioral changes. To a teacher dealing with an overcrowded classroom environment, time required to change behavior can be an important issue. The data showed that the initial PSR sessions produced a more rapid decline in disruptive behavior than did the initial PI sessions. A plausible explanation for this observed phenomenon is that soft reprimands, in that they temporarily suppressed disruptive behaviors, allowed students to tune in more rapidly to those behaviors that were being approved than did the ignoring strategy.

An examination of time-off-task behavior revealed that this kind of response was slightly higher under PSR phases than the PI phases. A possible explanation for this phenomenon may be found in the concept of negative reinforcement (Solomon, 1964). Solomon (1964) states that "a punishment is a noxious stimulus, one which will support, by its termination or omission, the growth of new excape or avoidance responses [p. 239]. A response which leads to termination of or escape from a noxious stimulus is said to be negatively reinforced. In the present study, targets could escape soft reprimands by terminating disruptive behaviors and behaving passively. In addition they could avoid such behaviors by behaving passively. However, no noxious stimuli were delivered for behaving disruptively under the PI conditions. In other words, under the PI conditions time-off-task behavior simply resulted in non-approval.

From informal observation it appeared that variables other than direct teacher attention were affecting the targets' behaviors. For example, vicarious reinforcement appeared to be a significant factor. A point effectively demonstrated in the research of Bandura (1969) is that observation of another person (designated as a model) being rewarded for certain behavior can strongly motivate the observer to perform the same behavior. This possibility exists in the present study in that the targets could hear the teacher dispense praise statements to other class members and other targets. Support for this notion was derived from the informal observation of two of the targets who on occasion asked the teacher why she did not praise them after she had praised other students. In addition, the reduction in disruptive behavior produced by teacher reactions reduced the possibility of "positive" peer reinforcement for such behaviors.

The Ss were similar on such demographic variables as age, race, sex, and performance on I.Q. tests. There is also a possibility that they had similar reinforcement histories, though this could not be ascertained. Previous studies support the notion that reinforcement history is a major factor in determining how Ss who fall within similar demographic categories will respond similarly to reinforcement. For example, various laboratory studies have demonstrated that delinquent and non-delinquent adolescents respond differently to praise and blame (Orzech, 1962; Kuenstler, 1970). In addition, one

study (Kennedy and Willcutt, 1964) showed that the fifth grade students labeled as introverts achieved a higher performance level when praised; conversely, those students labeled as extroverts achieved a higher level when blamed.

There are two possible explanations for less extinction of desirable behaviors during PI withdrawals than under the PSR reversals. One possibility is that the teacher and her class became more exclusively paired with positive praise in the PI than the PSR phases. Also, the teacher emitted a greater frequency of other positive (OP) responses during the PI conditions than during PSR conditions. That is, there is some possibility that the teacher's gestures and subtle interaction were more frequent and positive in nature.

Though the most impressive aspect of this study was the immediate and dramatic change in student behavior which took place when the experimental contingencies were introduced, it must be remembered that the experimental program also involved an immediate and dramatic shift in the teacher's behavior. Once teachers can alter their behavior to become more effective in managing a classroom they should have more time for structuring instructional strategies that will provide for a more optimal and efficient learning environment.

Conclusions

Competent teachers will probably use positive forms of discipline far more frequently than they do punitive measures in managing student

behaviors. Yet, even the best of teachers will find it neoessary on occasion to use verbal reproofs in dealing with certain unacceptable behaviors, especially when they are frequent and/or intense or destructive. When such reproofs are used, they should be made private rather than public to reduce the possibility of peer attention, which may serve to strengthen the very behaviors that one wishes to weaken.

More specifically the conclusions of this study are as follows.

1. The teacher who uses a great deal of praise as an immediate consequence for appropriate behavior should find that the frequency of such behaviors will increase (at least for most students).

2. The teacher who uses praise in concert with immediately softly reprimanding or ignoring disruptive behaviors should find that the frequency of such behaviors will decrease (at least for most students).

3. The teacher who uses soft-reprimands as aversive social consequences for disruptive behaviors rather than ignoring such behaviors should find that the frequency of such behaviors should decrease more rapidly.

4. The study adds confidence to the assertion that teachers can be taught systematic procedures in a short period of time and can use them to gain more desirable behaviors from their students.

Suggestions for Further Study

1. Experimental replication in which the sex, race, and age (high school) of the students and teacher are varied.

2. Experimental replication with an increased number of target Ss, preferably a whole class.

3. Experimental replication in which other ecological variables such as amount and kind of peer reinforcement are monitored simultaneously with target S and teacher behaviors.

4. Experimental replication in which academic variables such as grades, rate of completion of leson activities, etc. are used as dependent variables.

5. Direct experimental replication of the present study.

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APPENDICES

APPENDIX A

TABLE A-1

Behavior Rating Agreement for Experimenter and Target Student Observers During Each Phase for Class A

Observers	Training Session	Baseline	PI_1	$Rev._1$	PSR_1	$Rev._2$	PI_2	$Rev._3$	PSR_2
1[a]	.88	.90							
2[b]	.91	.94							
3[c]	.86	.84							
4	.85	.87							
5	.92		.88	.85	.90	.83	.88		
6[d]	.85		.92	.94	.87	.88	.85		
7[e]	.93							.90	.85
8[f]	.90							.86	.87

[a]Served as observer one in class B.

[b]Served as observer two in class B.

[c]Served as observer four in class B.

[d]Served as observer six in class B.

[e]Served as observer eight in class B.

[f]Served as observer nine in class B.

TABLE A-2

Behavior Rating Agreement for Experimenter and Target Student Observers During Each Phase for Class B

Observer	Training Session	Baseline	PSR_1	$Rev._1$	PI_1	$Rev._2$	PSR_2	$Rev._3$	PI_2
1	.88	.90							
2	.91	.94							
3	.93	.87							
4	.86	.89							
5	.96		.93	.86	.92	.90			
6	.85		.96	.92	.87	.86			
7	.88		.83	.88	.85	.93			
8	.93						.94	.90	.88
9	.90						.88	.85	.83

TABLE A-3

Behavior Rating Agreement for
Experimenter and Teacher Observer

Observer	Training Session	Classroom Reliability Check
1	.100	.90
2	.94	.87
3	.92	.92
4	.88	.90
5	.86	.83
6	.96	.90
7	.86	.88
8	.90	.90
9	.90	.86
10	.90	.88
11	.94	.90
12	.88	.90
[a]13	.90	---

[a] Served as reliability rater

APPENDIX B

INSTRUCTIONS

Praise plus Ignore Condition (after Madsen, et al. 1968a)

Ignoring inappropriate behavior. During this phase of the study you should learn to ignore (do not attend to) behaviors which interfere with learning or teaching, unless of course, a [student] is being hurt by another, or some important material is being destroyed. Learning to ignore is difficult. Most of us pay attention to the violations. For example instead of ignoring we often say such things as the following: 'Johnny, you are suppose to be working'; 'Sue, will you stop bothering your neighbors'; 'Henrietta, you have been at that window for a long time'; 'Jack, can you keep your hands off Bill'; 'Alex, stop running around and do your work'; 'Jane, will you please stop rocking on your chair.'

Behaviors which are to be ignored include motor behaviors such as getting out of seat, standing up, running, walking around the room, moving chairs, or sitting in a contorted manner. Any verbal comment or noise not connected with the assignments should be ignored; such as: carrying on conversations with other children when it is not permitted, answering questions without raising hands or being called on, making remarks when no questions have been asked, calling your name to get attention, and extraneous noises such as crying, whistling, laughing loudly, blowing noise, coughing. An additional important group of behaviors to be ignored are those which the student engates in when he is suppose to be doing other things, e.g., when the child ignores your instructions you are to ignore him. Any noise made with objects, playing with pencils or other materials should be ignored, as well as, taking things from or disturbing another student by turning around and touching or grabbing him.

Verbal Praise for appropriate behaviors. [The following conditions should be used simultaneously with the ignore conditions.] Teachers are inclined to take good behavior for granted and pay attention only when a child acts up or misbehaves. I am now asking you to try something different. This procedure is characterized as 'catching the [student] being good' and making a comment designed to reward the student for good behavior. Give verbal praise only when the student is doing what is expected. The praise should always be directed to

individuals, not to the group as a whole. Inappropriate behavior would not be a problem if all students were engaged in a great deal of study and school behavior. Shape by successive approximations the behavior desired by using praise and attention. Start 'small' by giving praise and attention at the first signs of appropriate behavior and work toward greater goals. Pay close attention to the students who normally engage in a great deal of misbehavior. Watch carefully and when the [student] begins to behave appropriately, make a comment such as, 'You're doing a fine job, (name).' It is very important during the first few days to catch as many good behaviors as possible. Even though the student has just thrown an eraser at you (one minute ago) and is now studying, you should praise the study behavior. (It might also decrease the rate of eraser throwing). I am assuming that your commendation and praise are important to the [student]. This is generally the case, but sometimes it takes a while for praise to become effective. Persistence in catching [students] being good and delivering praise and attention should eventually pay off in a better classroom. Some examples of praise comments are as follows: I like the way you are doing your work quietly (name). That's the way I like to see you work _____. That's a very good job _____. You are acting so nicely today. Thank you for behaving so well today _____.

In general, give praise for achievement and prosocial behavior. Specifically, you can praise for concentrating on individual work, raising hand when appropriate, responding to questions, paying attention to directions and following through, sitting at desk and studying sitting quietly if noise has been a problem. Try to use variety and expression in your comments. Stay away from sarcasm. Attempt to become spontaneous in your praise. At first you will probably get the feeling that you are praising a great deal and it sounds a little phony to your ears. This is a typical reaction and it becomes more natural with the passage of time.

Praise Plus Soft Reprimand Conditions (Similar to O'Leary, et. al., 1971)

This phase of the study involves contingent verbal praise for appropriate behaviors and soft reprimands for inappropriate behaviors. The verbal praise is to be delivered to individual students only.

Verbal praise for appropriate behaviors. (same as in the praise plus ignore condition).

Soft reprimands for disruptive behaviors. In general soft reprimands are to be delivered to individual students for the same type of behaviors that were ignored under the praise plus ignore condition. Reprimand disruptive behavior only! Do not reprimand time-off-task behavior. Make all reprimands soft. (i.e., speak so that only the child being reprimanded can hear you). Make all soft reprimands just as harsh and firm as you would with loud reprimands, i.e., making them a punishing consequence rather than a rule or direction. Disapprove all instances of disruptive behavior whenever they occur with direct, verbal, sternly given reproof. Whenever possible use students' names when delivering the punishment, Be very specific! Avoid such statements as "Johnny, you know that you are suppose to be doing your lesson". "Sue, why aren't you doing your work"; "James, shouldn't you be listening to the record"; etc. Be direct! be specific! Use such reproofs as, "Johnny, I am not pleased with the way you are acting"; "Jane, you are acting bad and I don't like it"; etc. Do not threaten students with or apply other consequences, such as keeping them after school, exclusion from class, sending them to the principal, etc.

Always place your hands together behind your back when delivering a soft reprimand. This will serve as a subtle cue to the observer that you are not talking to the child about something else and that you are delivering the reprimand. Remember! the observer cannot hear you. Rule: Never place hands in place behind your back unless you are administering soft reprimands.

General rules for both conditions. (1) You are to maintain experimental conditions throughout the class period, not just when the observers are present. (2) Deliver verbal praise or soft reprimands to individuals only and deliver them as soon as possible after the behavior occurs. That is, deliver them immediately. (3) Use reprimands and praise with all students, not just the target students (4) Hold other behaviors as constant as possible. The E will provide you with intermittent feed back to insure adherence to the above requirements.

APPENDIX C

TEACHER EVALUATION OF THE TWO APPROACHES

Q: What basic management problems were you having in your class prior to the experiment?

A: Disruptive behavior on the part of a few students in each class. I had a problem with excessive talking, and walking around the room.

Q: What means had you taken to deal with the problem behaviors and what degree of success did you have with these means?

A: I used various means to deal with such problem behaviors. They knew that I could not keep them after school because of the bus schedule. So my main defenses were to send them to the principal's office or call their parents. They seemed to be more fearful of me talking with their parents. So sometimes I could use this as a threat. I also reprimanded them in class, threatened to lower their grades. On a few occasions I would not let them assist me in passing out LAPS, et cetra, if they did not behave appropriately. For some reason the disruptive students would volunteer more than others to assist me. I guess it was just a means of seeking attention.

Q: What were your initial feelings about the use of verbal praise in combination with ignoring disruptive behaviors to reduce inappropriate classroom behaviors?

A: The use of verbal praise seemed artificial and fake. Praise was the last thing that I thought would work.

Q: Have your feelings changed as a result of the experiment (concerning the praise-ignore combination)? If so, why?

A: Yes. After a while it became automatic and the students reacted positively to it.

Q: What were your initial feelings about the use of soft reprimands in combination with praise to reduce inappropriate classroom behaviors?

A: At first I had reservations about the effectiveness of this approach. It also seemed artificial and I frankly didn't think that

I would be able to do it effectively. Also, I initially thought that the students would catch on to why I was using soft reprimands and respond loudly. But they didn't.

Q: Have your feelings changed as a result of the experiment? If so, why?

A: Yes. It seems to be less attention getting for the student. Plus it worked. Also, the students would seem to "try me" with the "praise only" approach.

Q: Which approach permitted you to act more habitually in the classroom? Or which approach did you feel most comfortable with?

A: At first I felt more comfortable with the praise-soft reprimand approach but when I saw that praise alone was about as effective in the long run, I felt just as comfortable with it. I guess I was so used to reprimanding, though this was a new way.

Q: Which approach interfered most with your teaching?

A: In a few instances, getting to the student to reprimand took away from teaching. That is, on some occasions I was interrupted in helping one student to walk over and reprimand another. The rearrangement of seats helped some depending on my location in the room.

Q: Were the results of either approach worth the effort expanded by you?

A: Most definitely so! In fact it appeared to be almost miraculous. I just didn't think that anything would work with these students. The time spent in implementing the methods was well compensated by the resulting effects.

Q: Which approach will you use in the future to manage your classroom? If neither, explain. Be specific.

A: I probably will use a combination of both approaches with emphasis on the use of praise. That is, when the student is not too disruptive I will ignore him. However, when it will not take away my time in helping another student or when the student becomes very disruptive I will also use soft reprimands.

APPENDIX D

TABLE A-4

Frequency of Teacher Behaviors During Each Experimental Phase In Class A

Behavior	Baseline	PI_1	$Rev._1$	PSR_1	$Rev._2$	PI_2	$Rev._3$	PSR_2
ON	31	1	16	1	16	0	8	1
OP	2	4	2	0	1	4	1	0
P	1	20	0	21	0	28	1	31
SR	0	0	0	30	0	0	0	22
Total	34	25	18	42	17	32	10	43

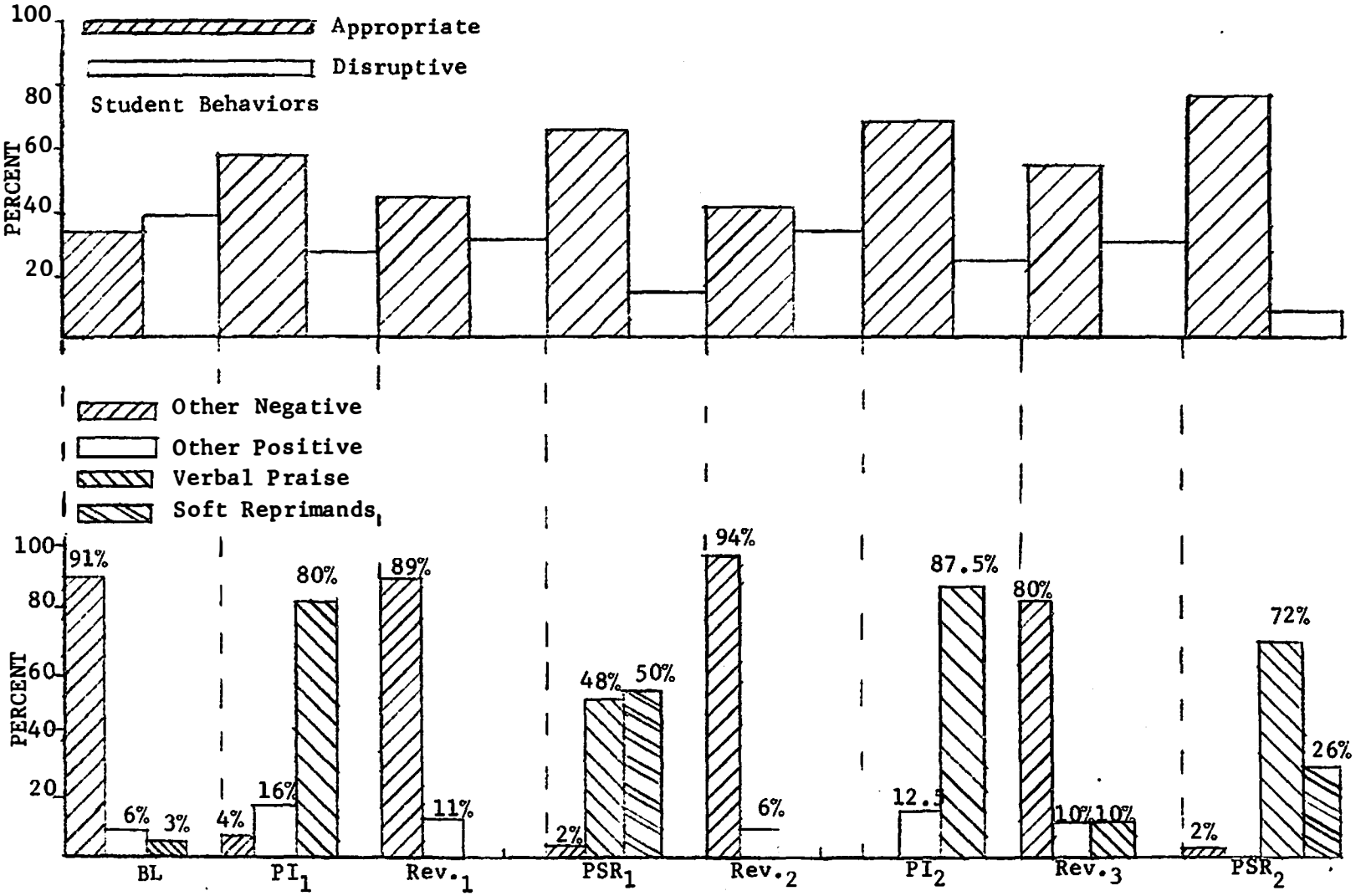

Figure A-1. Percent of student behaviors as a function of teacher behavior during each experimental phases in class A.

TABLE A-5

Frequency of Teacher Behaviors During Each Experimental Phase In Class B

Behavior	Baseline	PSR_1	$Rev._1$	PI_1	$Rev._2$	PSR_2	$Rev._3$	PI_2
ON	23	1	13	1	8	0	8	0
OP	1	1	0	3	2	3	2	3
P	2	29	1	32	0	35	0	29
SR	0	9	0	0	0	7	0	0
Total	26	41	14	36	10	45	10	32

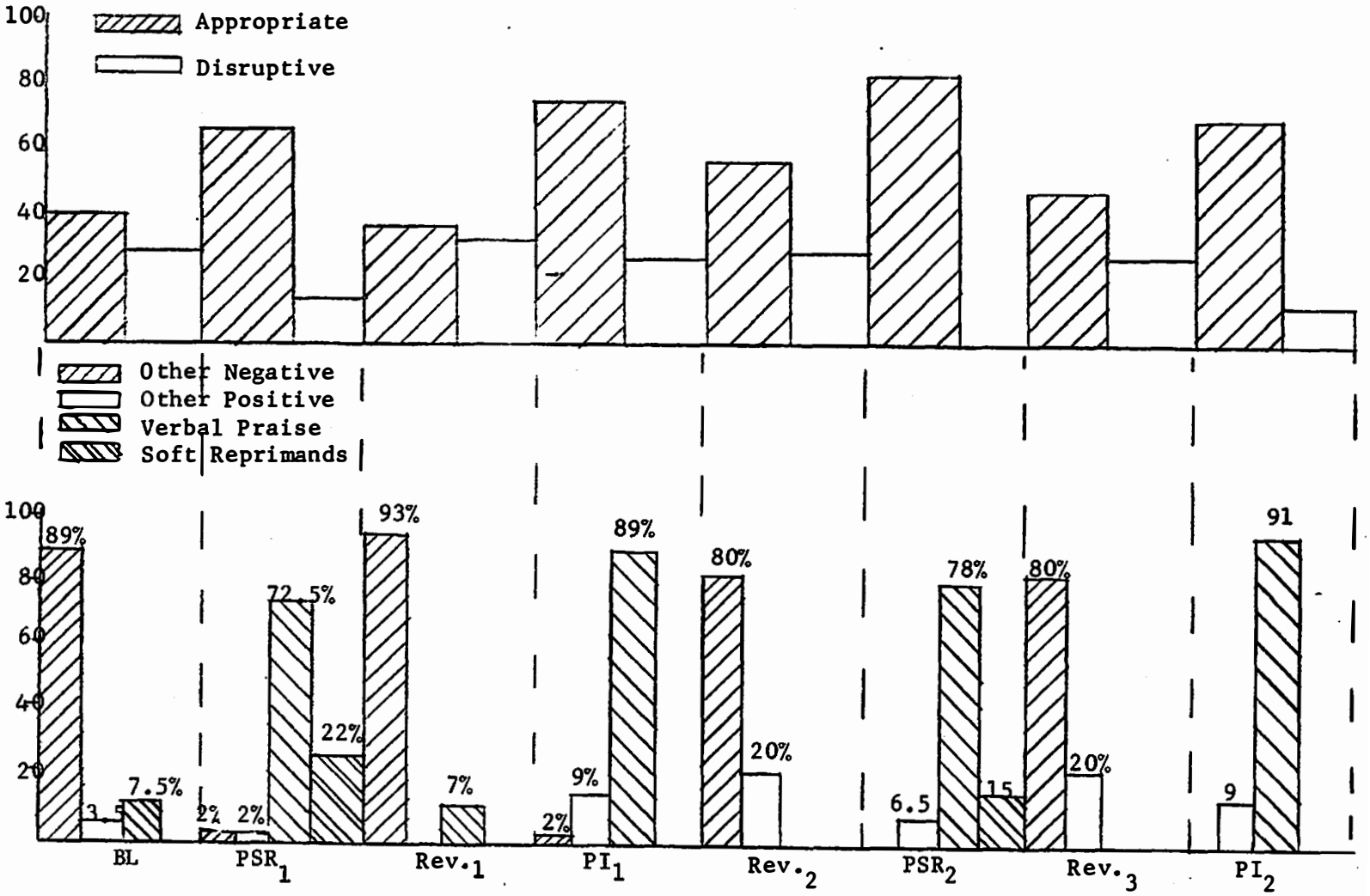

Figure A-2. Percent of student behaviors as a function of teacher behavior during experimental phases in class B.

VITA

Luther M. Kindall was born in Nashville, Tennessee, on November 1, 1942. He was graduated from Pearl High School in 1961. In June, 1967, he received a Bachelor of Science degree in General Psychology from Tennessee State University. He received a Master of Science Degree in Educational Psychology from Tennessee State University in August, 1968. After serving one year as state coordinator for The Project to Utilize Educational Talents, he became an Instructor of Psychology at Tennessee State University. After teaching for two years, he entered graduate school at The University of Tennessee in 1970. While in graduate school he held, at different times, a teaching assistantship, graduate fellowship and was an Instructor for Roane State Community College and Brushy Mountain State Prison.

He is married to the former Alpha J. Simmons and has one daughter.