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### ABSTRACT

This study explored the relationship between changes in student classroom behavior and teacher behavior. More specifically, teacher responses to students were evaluated as a function of systematic changes in the students' classroom behavior. The investigation was conducted in a fifth-grade classroom of a primary school located in a residential, suburban neighborhood. Two disruptive pupils from the class were chosen as target students for the study. The dependent, observable variables were teacher behavior, teacher verbal responses, teacher ranking cards, and subjective unit of irritation. The independent, observable variables was student behavior. The variables were measured by six undergraduates and one teacher. The reliability of the observers was assessed before and after completion of the study. The results showed that changes in the students' classroom behavior had consistent effects on the behavior of the teacher. (Discussion of the results follows, stressing the importance of reward. Two tables of data are included.) (BRB)

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**AN INVESTIGATION OF THE INFLUENCE OF STUDENT  
BEHAVIOR ON TEACHER BEHAVIOR**

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Functional analysts have demonstrated that when appropriate student behavior is followed by teacher attention, the rate of appropriate behavior emitted by the students increases (Becker, Madsen, Arnold, and Thomas, 1967; Cormier, 1970; Hall, Lund, and Jackson, 1968; Madsen, Becker, and Thomas, 1968). These investigators followed a pattern of manipulating the teacher's behavior as their independent variable and studied the resulting change that occurred in student behavior as their dependent variable. The effects that student behavior may have on the teacher's manner of responding to his students has largely been ignored.

Although no studies were found investigating the effects of student behavior change on teacher behavior in a normal classroom, it is reasonable to believe that students do possess some form of reinforcement for teachers. Tharp and Wetzel (1969) pointed out that in any social system every individual's behavior is subject to reinforcement. If one assumes that all behavior is under the control of some form of reinforcement, it is plausible that within the student-teacher social relationship the student possesses some reinforcers for the teacher.

Indirect evidence of student influence on teacher behavior was provided by Barberich (1970) who assessed the effects of a simulated child's correctness on the teaching behavior of adults. Seven undergraduate females (adults) were observed under conditions where they taught a simulated child a marble sorting task. The experimenter, by leading the adults to believe they were teaching a real child, was able to systematically manipulate the "child's" correctness on a trial-by-trial basis. When correctness was made contingent upon a particular teaching behavior the adult increased the frequency at which she emitted that behavior which increased correct responses. The reinforcement effect of the "child's" correctness was demonstrated to influence the adult's use of tangible reinforcers, verbal rewards and punishments, and motor behavior. More direct evidence of student influence on teacher behavior was provided by Klein (1971)

who examined the influences of student behavior on teacher classroom behavior. Twenty-four guest teachers, who were unaware of the nature of the study, were invited into 24 graduate and undergraduate education classes. Klein manipulated the classroom behavior of the students to include normal, positive and negatively defined behaviors during the one class hour the guest instructor was teaching the class. She found that changes in student classroom behavior had a profound effect on the classroom verbal and non-verbal behavior of the guest teachers. In a study conducted by Graubard, Rosenberg and Miller (1971) retarded children were trained to modify the behavior of teachers. The children were instructed in "behavior modification theory and techniques," specifically they were taught to use reinforcers such as eye contact, asking for extra help and complimentary comments contingent upon teacher positive or negative contacts. These procedures resulted in dramatic increases in teacher positive contacts (praise) and a decrease in negative contacts.

At present, the effect student behavior may have on teacher behavior in an elementary school classroom is largely unexplored. The present study was a limited attempt to explore the relationship between changes in student classroom behavior and teacher behavior. More specifically, teacher responses to students were evaluated as a function of systematic changes in the student's classroom behavior.

**METHOD**

**Subjects and Setting**

The study was conducted in a primary school which serves an upperclass residential suburb primarily composed of professional families. A fifth grade teacher was selected on the basis of the school principal's recommendations to serve as the subject for the study. The teacher was a 25 year old female holding a BS degree in elementary education with nine months teaching experience and was recommended because of the problem behavior of several students in her class.

One of the problem children, Robin, was an 11 year old male student who was reported to be one of the worst behavior problems in the school. he was sent to the principal's office about every other day. Another problem child was Karen, an 11 year old female in the same fifth grade class. She, too, had a solid reputation for ignoring behavioral rules. Both students were chosen on the basis of the high scores assigned to them by the teacher on measures of disruptive behavior, as well as through anecdotal reports given by the principal. In addition to these students, three other students were chosen at random from the class to serve as experimental blinds to conceal the identity of the target students from the classroom teacher.

#### Dependent Variables

Teacher Behavior: The responses the teacher gave to the appropriate and inappropriate stimulus classes of the children's behavior were considered as one response category, teacher attention. That is, observers recorded the frequency of teacher attention respectively to inappropriate and appropriate categories of behavior of both Robin and Karen.

Teacher Verbal Responses: The observers' records of the teacher's verbal responses to student behavior were rated by two independent judges to assess the quality of these statements. Statements were rated as positive (those containing praise statements), negative (those containing reprimands) or neutral (those containing neither praise nor reprimands). Interjudge agreement was 87.4%.

Teacher Ranking Scores: The teacher was given a stack of 3" x 5" plain white cards each containing the name of one student in her class written on a separate card. The teacher was asked to arrange the cards in three separate but equal piles representing those students which were high, medium, and low on each of the behaviors she had identified as important for her class. After the three piles were completed, the teacher was asked to rank the low pile in order from best to worst. This procedure was carried out for each behavior included in the

appropriate and inappropriate categories. A teacher ranking score was obtained by adding the student's ranks on all behaviors. A high score indicated a student who was disruptive while a low score was indicative of a model student.

Subjective Unit of Irritation (SUI): This instrument was adapted from a technique developed by Joseph Wolpe (1958) and used to assess the amount of irritation the teacher subjectively assigned to each student. The teacher was presented with a stack of 3" x 5" plain white cards each containing the name of one student in her class. She was asked to imagine a scale from zero to one hundred where zero represented a student who caused her no irritation and one hundred represented the worst or most irritating student she could imagine. The teacher was then asked to assign each student a place on the scale by writing a number representing the student's place on the scale on a card. A high score indicated an irritating student and a low score a model student.

### Independent Variables

Student Behavior: Initially, observers entered the classroom in order to acclimate the teacher and her students to the presence of outsiders in the room. During these sessions, a record was kept of the student behaviors most frequently responded to by the teacher. Then, prior to the beginning of the experiment, the teacher, with the authors' help, identified and behaviorally defined those behaviors which she felt fell into two broad categories of behavior; appropriate classroom behavior and inappropriate classroom behavior. These two categories of behavior were considered the stimulus classes for the teacher though the teacher was unaware of this. Both classes of behavior described the inappropriate and appropriate behaviors for both Karen and Robin. The inappropriate stimulus category included behaviors such as asking questions about teacher provided instructions. For example, in response to teacher's instructions to "sit down" or "open your book," the child asked, "why should I do that?" Also, included in this

category were talking to other children without permission, leaving seat without permission and not paying attention. Generally, any behavior unrelated or disruptive to the class activity was included by the teacher in the inappropriate behavior category. The appropriate behavior category included behaviors such as following instructions; for example, the student must sit down or open his book when instructed to do so. Also, paying attention to ongoing class activities and having the necessary materials at his desk needed for the ongoing activities were defined as appropriate behaviors.

Recording Techniques and Observers: Two observers were assigned to each class for each day of the study. One observer monitored the target student's behavior while the other observer recorded the teacher's responses to that student. Student observers recorded the cumulative frequency of all behaviors occurring in each category during the observational periods. The teacher observer recorded the frequency of teacher responses in two ways. First, the frequency of the teacher's social attention to the students' inappropriate and appropriate behavior was recorded. Second, the teacher observer recorded the verbal reactions of the teacher in response to the target student's behavior. The daily observational period consisted of approximately one hour and was divided into four equal time periods. The two target students were observed for two time periods each day; the order of observation was randomized. The behavior of the students and the teacher's reactions to the students were monitored throughout the study. Observers were not told the purpose of the experiment nor were they informed of experimental changes during the study. The observers were requested to avoid all interaction with both the teacher and students in the class at all times.

Observer Training and Reliability: Six undergraduate students in an Educational Psychology class served as observers. All students received class credit for participating as observers. Observers were trained through role playing and a video tape simulation of the classroom behaviors identified by the teacher.

Observer reliability was calculated by the total number of agreements divided by the total number of agreements plus total number of disagreements. An agreement between observers constituted the same number of frequency tallies for each category of behavior. Average reliability for teacher observers was 93.9% with a range of 90.3% to 100%. Average reliability for student observers was 83.6% with a range of 82% to 85.4%. Observer reliabilities were also assessed following the completion of respective baselines for each student. Teacher observers averaged 88.9% with a range of 83.3% to 100%; student observer reliability averaged 82.2% with a range of 77.4% to 89.7%.

Design of the Study: A multiple baseline across behaviors design was used (after Hall, Cristler, Cranston, and Tucker, 1970). This design allows for an inference of casual relationship if behavior changes coincide across the multiples at the point when the experimental procedure is introduced. After the baselines of the teacher's reactions to each student were obtained, the experimental phases were applied successively to her reactions to Robin and later to Karen. The teacher's reactions to both students were measured concurrently.

In an attempt to avoid possible differential treatment toward the target students by the teacher and to obscure the identity of the target students, three experimental blind subjects were employed although the behavior of these students was not monitored by the observers nor was the teacher's reaction to these students recorded. Each time the authors interviewed a target student at least one experimental blind student was also interviewed before or after the target student. Both target students and experimental blind students were always seen individually. The classroom teacher was kept unaware of the identity of the target students throughout the study. The study was carried out in four phases:

**Baseline:** Before beginning baseline observations, the authors met with all the target students and the experimental blind students to solicit their cooperation. All students were told that they each would be doing something different



and that it was very important that they tell no one, not even each other, about their individual project. The importance of secrecy was repeatedly stressed throughout all phases of each experiment. During this phase all students were given an individual guidance activity taken from A Teaching Program in Human Behavior and Mental Health Handbook V for Fifth Graders by Ojemann, Dykstra and Pritchett (1969). Students were not informed that they were being observed.

**Instruction:** Instruction was initiated with the target students during this condition. To assess whether the student's behavior could be controlled without the use of tangible reward, the target students were asked to think of some ways they could improve their relationship with their teacher. The target students individually agreed upon the behaviors previously identified as appropriate as a way they could behave to improve their relations with their teacher. In addition, the students agreed upon the identified inappropriate behaviors as behaviors to be avoided. The students were not told how the behaviors were identified. Daily conferences were held with the target students to discuss the students' efforts and success in changing their behavior during this phase. Although the students were not told the observers were monitoring their behavior, the observations were used to informally communicate their daily progress to the students. The experimental blind students continued to receive individual guidance activities as in the Baseline phase.

**Tangible Reward:** Because the procedure used in Phase II did not result in adequate manipulation of student behavior, the target students were offered a tangible reward (model car kits for Robin and popular phonograph recordings for Karen) for each two day period they emitted one or less inappropriate behaviors per day. The students were told they were being observed and that the observers would give daily reports on their behavior to the authors. At this time, the students were also encouraged to attempt to increase their appropriate behavior as they eliminated inappropriate behavior; however, no contingency was placed on this. Both students were given a daily report on their performance. The

guidance related activities were continued with the experimental blind students.

Reversal: Only Robin was used in this phase of Experiment 1. He was told that the study was completed for him, that the observers would no longer be attending to his behavior and that he had done an excellent job. The authors encouraged Robin to maintain his modified behavior (a high percentage of appropriate behavior). The authors continued to interact with other children in the class but no longer with Robin. The observers continued to monitor Robin's behavior and the teacher's reaction to the student as in the previous phases of the study.

### RESULTS

As described in the procedure section, the teacher responses to appropriate and inappropriate behavior were monitored for both Robin and Karen. Appropriate behavior was considered desirable for the classroom, and inappropriate behavior was considered undesirable. To simplify the data presentation, the children's behavior is presented in terms of the percent of appropriate and the percent of inappropriate behavior the children engaged in. The teacher's reactions to the children's behavior is presented in terms of the percentage of her reaction to appropriate and inappropriate behavior of the children.

Figure 1-A shows that Robin engaged in a high percentage of inappropriate behavior throughout the Baseline and Instruction phases of the study. During these two phases, a high percentage of the teacher's responses were to Robin's inappropriate behavior; her verbal responses to Robin were mostly negative.

(See Table I)

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 Insert Figure 1 here  
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Upon introduction of the Tangible Reward Phase, the percentage of inappropriate behavior emitted by Robin decreased. Concurrently, during this phase, the

percentage of the teacher's responses to Robin's inappropriate behavior decreased; also the percentage of her negative verbal responses decreased and the percentage of positive verbal response rose. The percentage of Robin's inappropriate behavior increased during the Reversal phase as did the percentage of the teacher's responses to Robin's inappropriate behavior. The percentage of the teacher's negative verbal responses increased slightly.

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 Insert Table 1 here  
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Table 1 indicates a decline in Teacher Ranking Scale scores over all phases but the Reversal Phase. The SUI score remained essentially unchanged through three phases of the study but decreased during the Reversal phase.

Figure 1-B indicates a pattern of behavior for Karen similar to that of Robin. Karen engaged in a high percentage of inappropriate behavior throughout the first two phases. Likewise, a high percentage of the teacher's responses were to inappropriate behavior emitted by Karen. A relatively high percentage of the teacher's verbal comments were negative in nature and a low percentage were positive during these phases. During the Tangible Reward Phase, the percentage of inappropriate behavior emitted by Karen decreased markedly, and concurrently, the percentage of the teacher's attention to Karen's inappropriate behavior decreased. In addition, the percentage of negative verbal responses decreased and the percentage of positive verbal responses rose.

Karen's SUI scores in Table 1 progressively decreased during all phases of the study. The Teacher Rankings decreased through all phases of the study but increased at the last administration.

#### DISCUSSION

The data presented provided evidence that changes in the classroom behavior of the students had consistent effects on the teacher's behavior. This evidence

is made more compelling through the use of the multiple baseline design. With such a design, if the effect occurs successively as the treatment is multiply applied, then it is possible to make causal inferences. In this study, the treatment was applied successively across the teacher's behavior toward students. The modifications in both students' inappropriate behavior (the independent variable) coincided with decreases in the teacher's behavior toward each respective student. The type of teacher social attention, whether predominately to appropriate or inappropriate student behavior, delivered by the teacher varied for both students as a result of their change of behavior. This is consistent with findings by Klein (1971) that the behavior of college students has a profound effect on teachers and Graubard (1971) where retarded students were able to learn to reinforce specific teacher behaviors. In addition, the quality of the teacher's verbal responses (whether positive or negative), the amount of subjective irritation caused by each student and the teacher's ranking score for each student appeared to vary as a result of the experimental changes made in the student's behavior.

Two features of this study merit further discussion. First, the study was modeled on other studies which have attempted to modify a teacher's classroom behavior directly and the student behavior indirectly (Cormier, 1970, McAllister, et al, 1969). In this type of study, the students' behavior was changed through the intervention of the experimenters who got the teacher to change his behavior through the use of instructions. These investigators held frequent conferences with the teachers involved following experimental sessions to provide feedback in the form of praise or criticism to the participating teachers. In some cases it was necessary to provide more tangible rewards (such as college credit) in order to secure the teacher's cooperation (Hall, 1971). In this study, an attempt was made to change the children's behavior through instruction in much the same manner that has been generally employed with teachers. That is, the children were

told they could improve the classroom behavior of their teacher toward themselves by changing their behavior. In this study, as has analogously been reported with teachers, instruction and feedback alone did not produce a sufficient alteration of the independent variable, the child's behavior, to produce an effect. It may be hypothesized these children found the teacher aversive enough (both children stated they did not like the teacher) that they felt there was no possibility to be rewarded for appropriate behavior. In any case, through the use of tangible reward, both children radically changed their behaviors with the resulting change in the teacher's behavior toward them.

Secondly, a unidirectional approach was taken. This is the traditional approach taken by researchers investigating influences on classroom behavior. Generally, only the teacher's influence on student behavior is observed, in this study, the teacher's behavior was investigated. This approach has several limitations as have been noted by Bell, 1968, and Bell, 1971. Perhaps the most serious and evident of the limitations is that it ignores the two-way nature of any social interaction. This oversight may be one factor in the difficulty behavior analysts have experienced in achieving generalization (O'Leary and Brubman, 1971; Hanley, 1970; and Rindin and Bootzin, 1972). With a traditional approach, reinforcement from the intervention specialists is withdrawn from the teacher once the intervention program is complete; under these conditions, teachers often return to pre-intervention teaching techniques. The same pattern appears to hold with Robin, once the tangible reward was withdrawn, his behavior began to return to a pre-intervention pattern. Gresham, *et al.* (1971) noted that the new teacher behaviors established through reinforcement delivered by retarded children "...held to some extent even when reinforcement was withdrawn." However, their overall results were similar to Robin's behavior during reversal, that is, the individual's behavior reverted to baseline approximations. The question which is raised here, but unanswered, is what contingencies are present which cause the behavior change?

This seems to indicate the necessity of taking a broader approach to room behavior modification. This study has shown a student can affect behavior; other research has shown teachers can affect student behavior. Also apparent that the parameters of the two participants' behavior in this social interaction is very similar.

An interesting issue associated with this study concerns the relative expense of training education personnel. Teacher training often commands the expenditure of fairly great resources with sometimes questionable results (Popham, 1971). It has been reported (Walker and Buckley, 1972) that time to train students was relatively low compared to the time necessary to train teachers. This implies that teacher training may not be the most efficient method of establishing appropriate classroom behaviors. If students can be trained with less cost and equal or more efficiency perhaps we should switch our teacher training institutions to student training institutions. Students certainly appear to have the necessary reinforcing properties to manage teacher behavior. A more realistic implication, however, is that we begin to consider programs which simultaneously work with both students and teachers. There is no more reason to leave student behavior to chance than there is teacher behavior. Perhaps, if each member of the classroom structure, student and teacher, can learn to effectively reinforce appropriate behaviors in the other, enduring ideal learning conditions can be achieved and maintained.

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FIGURE 1

- A. The percentage of inappropriate behavior emitted by Robin and the teacher's percentage of response to Robin's inappropriate behavior.
- B. The percentage of inappropriate behavior emitted by Karen and the teacher's percentage of response to Karen's inappropriate behavior.

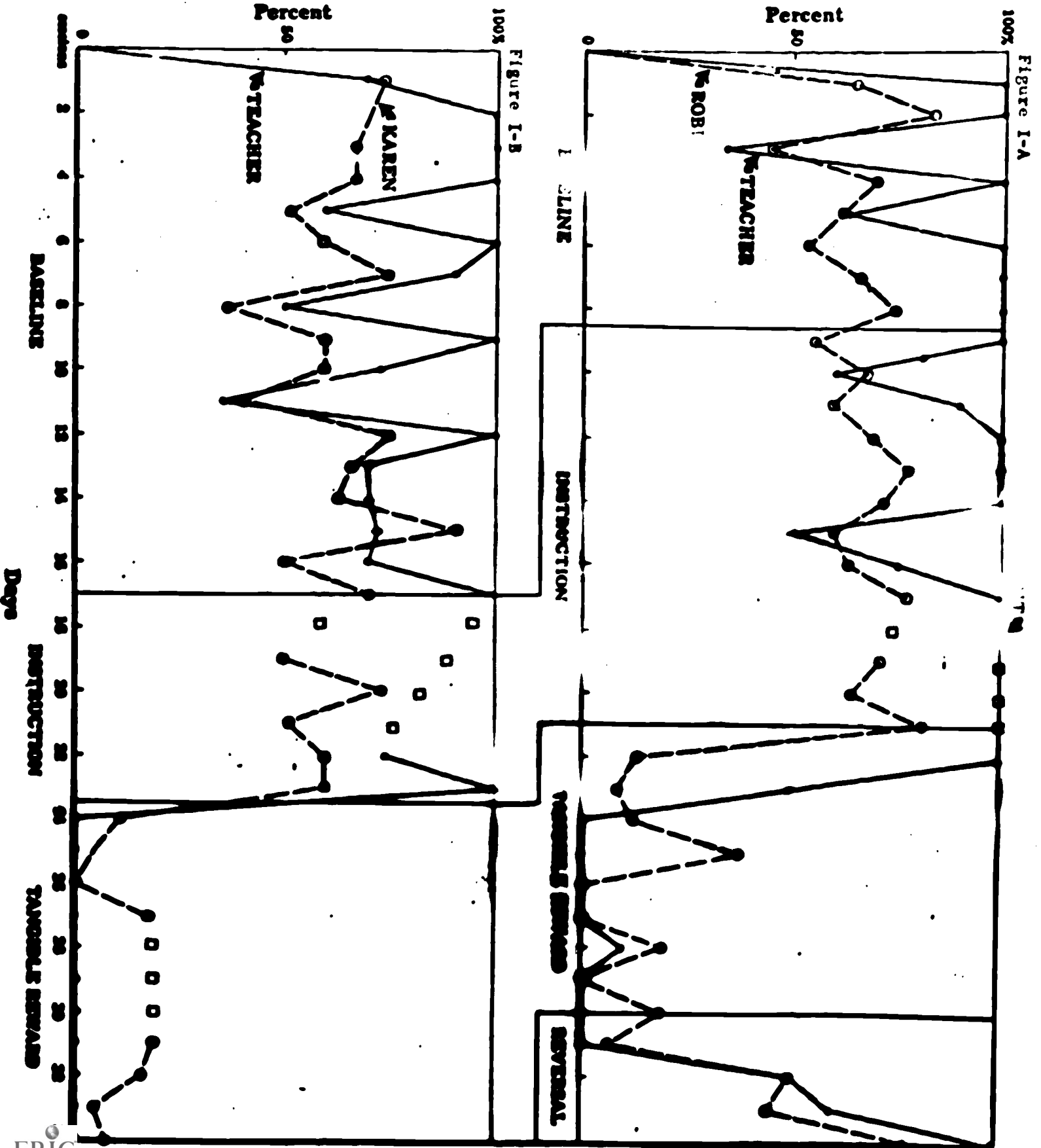


TABLE 1

TEACHER BASELINE SCORES (TBS) AND SUBJECTIVE UNIT OF  
IRRITATION SCORES (SUI) ASSIGNED BY THE TEACHER  
TO EACH SUBJECT FOR EACH PHASE OF THE STUDY

	BASELINE	INSTRUCTION	TANGIBLE REWARD	REVERSAL
Robin	TBS	275	194	219
	SUI	-	50 & 40 <sup>1</sup>	50
Karen	TBS	272	168 & 215 <sup>2</sup>	
	SUI	70	40 & 15 <sup>1</sup>	

<sup>1</sup> SUI scores were obtained two times for Robin (Instruction) and Karen (Tangible Reward). The first scores for both students were obtained during the suspensive condition and the second scores were assigned at the end of the condition.

<sup>2</sup> The teacher ranked Karen two times during the Tangible Reward Condition. The first ranking was obtained on the 28th day of the study and the second ranking on the 34th day.