*REMEDIATION OF MUTUALLY AVERSIVE INTERACTIONS
BETWEEN A PROBLEM STUDENT AND FOUR
TEACHERS BY TRAINING THE STUDENT
IN REINFORCEMENT TECHNIQUES*

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This study tested the effect of a social reinforcement training procedure for a problem student on the verbal and nonverbal approval and disapproval of four of the student's teachers. A design incorporating aspects of a multiple baseline within an extended reversal design (ABABA) was employed. Data were taken on the four teachers' approval and disapproval of a student regarded as a major discipline problem and the target student's approval and disapproval of the four teachers during baseline 1, experimental condition 1, baseline 2, experimental condition 2, and a postcheck or baseline 3 condition six weeks after experimental condition 2. Results showed that increased student approval and decreased disapproval were attributable to training procedures. The increased student approval increased three of the four teachers' approval and decreased the disapproval of all four teachers. Six weeks after experimental condition 2, both approval and disapproval by three of the four teachers and the student and disapproval by all four teachers and the student remained changed over baseline conditions. Student and teacher approval and disapproval were highly correlated at statistically significant levels.

DESCRIPTORS: education, classroom behavior, social reinforcement, praise, disapproval, attention, teachers, adolescents

Students labelled by teachers as behavior or discipline problems are found in most schools (Stephens, 1976). Often, the students' problems are attributable in part to mutually aversive interactions between the problem students and their teachers (Gilbert, 1975). The mutually aversive interaction often takes the form of a student's disapproval of a teacher followed by the teacher's disapproval of the student. A cycle of mutual disapproval is escalated and comes to characterize the student-teacher relationship (Hamblin, Buckholdt, Ferritor, Kozloff, and Blackwell, 1971).

Considerable evidence exists concerning the advisability of training the teacher in contingent reinforcement techniques as a means of replacing the aversive interaction with a positive one (Hall, 1970; Madsen and Madsen, 1974; Thompson, Brassell, Persons, Tucker, and Rol-

lins, 1974). In some school settings however, teacher training is costly and/or not feasible, raising the possibility that the students might be used as agents to change teacher behavior. Walker and Buckley (1972) proposed this possibility and concluded from their data that students can be trained in less time than teachers, thereby generating financial savings. In addition to cost considerations, there are other and perhaps more important reasons for studying the feasibility of changing teacher behavior by changing student behavior, most notably as a procedure to train teachers and other change agents who are for various reasons not accessible to the behavior modifier. It is hypothesized that teachers who have been successful in remediating problematic behavior with students are often frustrated by the difficulties encountered in generalizing the students' appropriate behaviors to other teachers and settings. If students can be taught to influence other teachers or individuals, they may be able to change some of the contingencies associated with inappropriate behavior

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and thus more effectively generalize treatment effects. Also, as Sherman and Cormier (1974) noted, in some situations it may be desirable and even necessary to train both the student and the teacher.

Although the effect of contingent teacher approval on desirable student behavior has received much emphasis (Cossairt, Hall, and Hopkins, 1973; Greer, Dorow, Wachhaus, and White, 1974; Greer, Dorow, and Miller, 1976; Kazdin and Klock, 1973), the study of the influence of contingent student approval on teacher behavior is not entirely without precedent (Berberich, 1971; Graubard, Rosenberg, and Miller, 1971; Klein, 1971, Sherman and Cormier, 1974). The present investigation sought to determine whether teaching a problem student to reinforce teachers' behavior would result in increased teacher reinforcement for the student, and thus eliminate the undesirable disapprovals by the student while increasing desirable teacher approvals. This investigation differed from previous related experiments in terms of student training procedures used, the number of teachers investigated, the inclusion of different subject-matter areas and classrooms, provision of a post-check of experimental effects six weeks after the experiment ended, and calculation of the degree of the relationship between student behavior and teacher behavior.

METHOD

Subjects

The target student was a female eighth-grade junior-high school student who was regarded by the school personnel as an extreme "behavioral" or discipline problem. School records indicated that during the period preceding experimental intervention, the student's teachers referred her to the Dean of Students for disciplinary action at a mean rate of five times a week for the use of verbally abusive language. During the same period, she was referred for more serious offenses at a mean rate of twice a month. The student's overall grade level as estimated by the Metro-

politan Achievement Test was 7.1 or about 1 yr below her grade level.

The school in which the experiment was conducted served a low socioeconomic population and is located in a high crime-rate neighborhood. The target student was also from a low socioeconomic status family.

The four teacher subjects each taught one of four different subject areas in four different classrooms. The subject areas were (a) mathematics taught by Teacher A who had an MA and 5 yr experience, (b) social studies taught by Teacher B who had an MA and 6 yr experience, (c) science taught by Teacher C who had a BA and 3 yr experience, and (d) Spanish taught by Teacher D who had an MA and 15 yr experience.

Data Collection

Data were gathered on the student and the four teachers' verbal and nonverbal approval and disapproval of each other for four months in 80, 20-min observation sessions. Additionally, six weeks after the end of the experiment, a series of five 20-min observations per teacher was performed to check the permanence of treatment effects for both the student and teachers. Observations were made during 20-min segments of 60-min class periods. The segment of the total class period in which observations were made was counterbalanced across all 100 observation sessions. Observers were present throughout the 60-min period, and the student was experimentally naive as to when she was being observed during the period, although the observers' presence was apparent to both the teachers and the student throughout the study. Teachers were told that the observers were present to observe the target student's interaction with peers and with the teacher.

Observers used the following recording procedures (see also Greer and Dorow, 1976). Student behavior was observed continuously for 30 sec, then recorded for 10 sec. Alternately, teacher behavior was observed for 30 sec, then recorded for 10 sec. During each observation in-

terval (30 sec), all approval and/or disapproval behaviors were counted. During the 10-sec recording interval that occurred after each teacher observation interval and alternately after each student observation interval, the total number of behaviors observed was recorded. Behaviors that occurred during the observation intervals were recorded on observation forms patterned after those of Madsen and Madsen (1974). A single cassette tape recorder emitted recorded verbal cues, which served to coordinate observation and recording intervals for both the data and reliability observer. A single earphone (earplug type) was used for each observer and was attached to a single cassette tape recorder.

A trained data observer, present at all observations, and a pool of three trained reliability observers were used. The data observer was determined before the beginning of baseline 1. A reliability observer was present for all observation sessions. Selection of which of the three reliability observers would be present on a given date was determined before the beginning of baseline 1. A reliability observer was present for all observation sessions. Selection of which of the three reliability observers would be present on a given date was determined before the study began and all three observers were rotated across sessions. Use of multiple reliability observers helped to control for observer drift and observer independence. Reliability observers and the data observer were naive as to the onset of experimental and baseline conditions.

Observers recorded the verbal and nonverbal approvals and disapprovals that the student and four teachers directed to each other. Teacher verbal approvals consisted of words and phrases such as "good", "okay", "correct", "beautiful", "excellent", "right", "I appreciate your good work", "neat-o", "right-on", and other words of praise directed to the student after the student emitted a behavior. Teacher nonverbal approvals consisted of smiles, head nods, looking at the student while the student was speaking, pats on the student's back and other nonverbal approvals. Verbal disapprovals consisted of state-

ments such as "poor", "wrong", "no", "I don't care", "so", "sit down immediately", "leave", "shut up", "be quiet", "don't talk", "pay attention", "you're being rude and impolite", "be considerate", and other words and phrases of condemnation, criticism, or sarcasm emitted in relationship to a student behavior. Teacher nonverbal disapprovals consisted of facial grimaces, frowns, slamming objects, and other clear gestures of condemnation, criticism, or sarcasm after a student behavior was emitted. Data were taken of the teachers' approval and disapproval of the target student only.

Student verbal approvals consisted of words and phrases such as "fine", "thank you", "right", "I appreciate that", "beautiful", "neat", "super", "perfect", "cool", "right-on", and other utterances of praise given by the student to the teacher in response to noncritical teacher responses to the student. Noncontingent approval of teachers by the student was regarded as any approval of a teacher's disapproval of the student and was not counted as an approval. This was done so that the student would not earn tokens for inappropriate approval. This latter condition was true of both verbal and nonverbal behavior. Student nonverbal approval consisted of smiles, pats, winks, head nods, looking at the teacher while the teacher was talking, hand raising when appropriate (that is, when responses were called for by the teacher or when the student asked permission to do something) and other nonverbal gestures of praise or indications of attentiveness to the teacher.

Experimental Conditions

During baseline 1 and before treatment, the student was given instruction in the dispensation of social reinforcement. The first two days of training coincided with the first two days of baseline 1 and were conducted in one of the student's classes other than those taken with those teachers observed. During the first day of classes, the student's class members were asked to list teacher behaviors that they liked and believed to be appreciated by most students. All students

listed verbal and nonverbal behaviors and some of the students role-played approval and disapproval behaviors of teachers. On the second day of instruction, students listed behaviors that they believed teachers should appreciate. During this period of instruction, all students role-played the behaviors they had listed as student approvals. On the third day of instruction, the problem student role-played appropriate teacher behaviors and the class role-played appropriate student behaviors. Student were told that the role-playing was part of their English unit on "Dramatics and Improvisation". The class counted the student teacher's approvals while she role-played teaching. Whenever the student role-played the teacher, she was cued for approval behaviors by another member of the class.

The third, fourth, and fifth days of training involved individual consultation between the problem student and teacher combined with role playing. The student was told the following: her academic and social progress with her teachers could be improved and that it might help to continue her dramatics class exercises with her other teachers and classes. The experimental conditions were outlined and the student agreed to participate and not discuss the experiment with her teachers or classmates.

During private counselling sessions, the student role-played appropriate student behaviors on cue first from visual signals and then using tape-recorded cues. A single tape recorder with an earphone (earplug type) was used by the student to play back tape-recorded cues for student approvals. The cues were the word "now" uttered every 30 sec. The student began using the tape recorder in her classes with the four teachers during the fourth day of baseline, but the cues were not recorded. This was done to control for the novelty effect of the tape recorder on both teacher and student behavior. Baseline data may have been affected by this procedure, but controlling for novelty was more crucial with regard to treatment effects.

In conjunction with the tape-recorded cues and during experimental conditions, the student

earned up to 50 tokens for each day that she complied with the cues by approving the targeted teachers during her classes with them. She was told that the observers were in her classes to check her compliance with the project and determine when she earned tokens. Her tokens could be exchanged for popular music recordings of her choice, extra gym periods, lunches with the English teacher, and extra credit toward her English grade.

Cues were begun at the onset of experimental condition 1, as was the token economy. Both the tape-recorded cues and the token economy were dropped at the end of experimental condition 1, reactivated during experimental condition 2, and dropped at the conclusion of experimental condition 2. The treatment conditions were dropped with Teachers A and D after Session 17, but continued for Session 18 through 20 for Teachers B and C during the experimental condition 2. At the conclusion of experimental conditions 1 and 2, the student was told that cues would no longer be given and she would no longer receive tokens. The student used the tape recorder with and without the tape-recorded cues, beginning with Session 3 of baseline 1 and continuing throughout the study, except for the postcheck observations.

Reliability

The data observer and one reliability observer were present at all 100 observations. Interobserver agreement was determined by dividing the total number of observations on which observers agreed by the sum of their agreements and disagreements and multiplying the resulting ratio by 100. Intervals of observation in which no behaviors were recorded by either observer were not counted as agreements. Reliability for student behavior ranged from 88% to 100%, with a mean reliability of 92% for all teacher observations.

Experimental Design

The design used was essentially that of an extended reversal (ABABA), except for the

inclusion of an early return to baseline for Teachers A and D in the last two sessions of experimental condition 2. This procedure was accomplished as a means of fading approval cues for the student in an effort to approximate successively persistence of treatment effects of the student with targeted teachers after experimental conditions were eliminated. Also, a post-check or a baseline 3 condition was added six weeks after the conclusion of experimental condition 2.

The uniform selection of five sessions per condition per teacher was determined before the experiment as a control for experimental bias (Glass, Willson, and Gottman, 1975; Neale and Liebert, 1973) that is, to avoid heightening of treatment effects via a bias in selection of the onset and end of experimental conditions. The total time necessary to complete the design, over six months, dictated the less-than-desirable number of sessions per condition.

Additional controls included having the student use the tape recorder and earphone during all sessions except the first three observations of baseline 1 and the five postcheck observations. Teachers were told that the tape recorder was being used to "calm the student" and that teacher behavior was observed only as it related to the target student's behavior. It was not necessary to tell teachers that their specific behaviors of approval and disapproval were being observed before or during the experiment because blanket permission had been obtained to observe all classroom interaction related to the target student's behavior with students and teachers.

The independent variable was student training and the use of taped cues in conjunction with a token economy. The dependent variable was teacher approval and disapproval behavior. It is also possible to conceptualize the design as a multivariate single-subject design (Glass, *et al.*, 1975) with both student behavior and teacher behavior as dependent variables and the student training and cueing procedures as the single independent variable.

RESULTS

Student Behavior

The effects of training and use of the tape-recorded cues in conjunction with a token economy on the students' approval and disapproval are shown in Figure 1. During experimental condition 1, the approvals increased for all teachers and disapprovals decreased for all teachers. The approval rate rose steeply for Teacher A during the last three sessions of baseline 1 (Sessions 3, 4, 5), raising some questions as to whether or not the intervention procedures of experimental condition 1 functioned to raise Teacher A's approval. The disapproval rate was stable and clearly dropped during experimental condition 1, a strong indication that the cues were indeed effective for the student even with Teacher A.

For Teachers B, C, and D, the target student inverted the ratio of disapproval to approvals between baseline 1 and experimental condition 1. During baseline 1, there were more teacher disapprovals than approvals; during experimental condition 1, there were more teacher approvals than disapprovals. For Teachers B and C, there were more student disapprovals than approvals during baseline 2, and for Teacher D there were fewer student disapprovals than approvals. During experimental condition 2, the student's approval was distinctly separated from the student's disapproval for all four teachers, with disapproval low and approval high. Approval rates were lowest for Teachers B and C, hence treatment conditions were continued for all five sessions of experimental condition 2 for these teachers. Because approval rates were high and disapproval rates low, experimental conditions were removed during Sessions 18, 19, and 20 for Teachers A and D as a means of fading cues. Approval remained high and disapproval remained low for Teachers A and D.

The permanence of treatment effects on the student's approval and disapproval is shown in the postcheck of Figure 1. Approval dropped for

Fig. 1. Number of student approvals and disapprovals of the four teachers.

all teachers when compared to experimental condition 2; however, approvals were comparable to all experimental condition 1 approvals, with the exception of Teacher A. Approvals with Teachers A and D were considerably higher than disapprovals, and disapprovals were approximately even for Teachers B and C. Student approvals and disapprovals remained considerably changed over baseline 1 conditions.

Teacher Behavior

Each individual teacher's approvals and disapprovals of the target student are shown in Figure 2. During baseline 1, disapprovals of the target student were greater than approvals for all teachers, with the exception of Teacher A. During condition 1, disapprovals decreased and approvals increased for all four teachers, with approvals being greater than disapprovals for Session 10. During baseline 2, approvals decreased from experimental condition 2 for all teachers; however, disapprovals exceeded approvals for Teachers B and C only. For experimental condition 2, approvals once again increased and disapprovals decreased over baseline 2. Approvals were higher than disapprovals for all four teachers.

During the postcheck, approvals were greater than disapprovals for Teachers A and D, and approximately equal for Teachers B and C. Approvals were greater than baseline 1 and disapprovals were fewer for all four teachers. The approval and disapproval configuration for the postcheck was more similar to experimental condition 1 than any of the other conditions, particularly for Teachers B, C, and D. Treatment effects were more pronounced in terms of decreases in teacher disapproval of the target student.

An increase in the number of approvals and a decrease in the number of disapprovals given by the student to her teachers led to an increase in the teacher's approvals and a decrease in their disapprovals to the target student. Comparisons of Figure 1 with Figure 2 indicate an apparently strong relationship between number of student

approvals and corresponding number of teacher approvals. Pearson product-moment correlation coefficients between per-session total disapprovals by the teachers and per-session total disapprovals by the target student was 0.88 ($p < 0.005$). Similarly, the correlation for approvals was 0.84 ($p < 0.005$). The approval correlations for each session of the student with each teacher were as follows: Teacher A 0.96 ($p < 0.005$), Teacher B 0.47 ($p < 0.01$), Teacher C 0.92 ($p < 0.005$), and Teacher D 0.51 ($p < 0.005$). Similarly, the disapproval correlation coefficients were as follows: Teacher A 0.68 ($p < 0.005$), Teacher B 0.81 ($p < 0.005$), Teacher C 0.87 ($p < 0.005$), and Teacher D 0.91 ($p < 0.005$).

DISCUSSION

The present study demonstrated that training a student classified as having behavioral problems to approve her teachers verbally and nonverbally led to increased verbal and nonverbal reinforcement of the student by three of the four teachers and a decrease in disapproval for all four. The procedures used here functioned as indirect strategies for training the teachers and as a direct strategy for remediating the cyclical-critical relationship between the student and her teachers. The high correlations between student approval and disapproval and teacher approval and disapproval replicate the findings of Greer *et al.* (1976), and are similar to the findings of Dorow (*in press*) regarding the correlation between approval received by students and the subsequent reinforcement value of the subject matter taught.

Students who have acquired inappropriate social behaviors and thus the label of delinquent, socially maladjusted, or predelinquent, may need to acquire socially adaptive contingency management skills in order that they may reshape the environment to which they return. One of the most crucial issues with which behavior-modification programs must deal is the long-range effects of programs. One procedure for

Fig. 2. Number of teacher approvals and disapprovals of the target student.

increasing the long-range effects may be to train students who are ready to return to uncontrolled environments in social reinforcement techniques in order that they may reshape the interpersonal environments to which they return. The post-check data demonstrate that six weeks after treatment condition 2, both the teachers' and the student's behaviors were occurring at approximately the same frequencies as they had during condition 1. Although the treatment effects had waned when compared to treatment condition 2, both student and teacher behavior revealed continued treatment effects.

Ethical considerations necessitated that the teachers be informed that observations of their interaction with the student were being made, inasmuch as they were relevant to the target student's behavior. Blanket consent for observing all classroom interaction was obtained, and the teachers were not told before or during the experiment that their approvals and disapprovals of the student were the specific behaviors being observed. This was done in order to control bias on the part of teachers as much as possible, while ensuring that ethical standards regarding experimentation were met.

Informal conversation with the four teachers after experimental condition 2 and during the postcheck indicated that they were pleased with the target student's "remarkable socialization" and new-found "maturity". More importantly, the target student was referred to the Dean of Students only once after experimental condition 2. The student often commented on how much nicer she thought her teachers had become. No data were taken on whether or not the teacher's behaviors generalized to other students. Future research might focus on generalization of the teachers' behaviors to other students. In addition, related research should isolate that component or those components of the total package that are most effective.

There is no evidence other than teacher report and school files that nonverbal disruptive behavior decreased. Unless only contingent student approvals of the teacher are reinforced,

students undergoing this training procedure could conceivably use approval to mask other behavior problems. It would seem, however, that if a student's major problems are behaviors other than teacher approval and disapproval, then those are the behaviors that need to be reshaped.

The student training procedures offer a potentially viable approach for dealing with student and teacher relationships by counsellors, school psychologists, consultants, and departmental coordinators, whenever they cannot directly train teachers and whenever change agents have access to the student. Indeed, the same procedures might prove viable in any setting in which a mutually aversive interpersonal relationship needs to be replaced with a mutually reinforcing relationship.

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