**INSTRUCTING BEGINNING TEACHERS IN
REINFORCEMENT PROCEDURES WHICH
IMPROVE CLASSROOM CONTROL^{1, 2}**

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Systematic reinforcement procedures were used to increase study behavior in the classrooms of three beginning teachers experiencing problems of classroom control. Classroom study rates were recorded during a baseline period. During subsequent experimental periods, the teachers changed one or more reinforcement contingencies (teacher attention, length of between-period break, a classroom game) to bring about increased study rates and concomitant reductions in disruptive behaviors. A brief reversal period, in which these contingencies were discontinued, again produced low rates of study. Reinstatement of the contingencies resulted once again in marked increases in study behaviors.

Previous studies (Hall, Lund, and Jackson, 1968; Evans and Ozwalt, 1968; Thomas, Becker, and Armstrong, 1968) have shown that teacher-applied contingencies could be used to increase or decrease study rates and academic performance of dawdling or disruptive pupils in regular school classrooms. These studies, like almost all of those which have demonstrated that teacher-applied contingencies can be effective in special education classrooms (Wolf, Giles, and Hall, 1968; Clark, Lachowicz, and Wolf, 1968; O'Leary and Becker, 1967; Hall and Broden, 1967; McKenzie, Clark, Wolf, Kothera, and Benson, 1968), were car-

ried out by experienced teachers. Often, the teachers had been selected because of their excellent classroom management skills and the high probability that they could carry out the experimental procedures successfully.

These demonstrations have been important, but they have not addressed themselves to one of the most significant aspects of classroom management in education: the training of beginning teachers in the principles and procedures which will bring about classroom control.

The present studies were carried out in the classrooms of three first-year teachers. Not only were they initially unfamiliar with learning theory principles and the systematic application of contingencies, but each was experiencing significant problems of general classroom control.

Teacher One

The first teacher had received his B.A. in education the previous year. His first teaching assignment was a class of 30 sixth-graders in a public school located in a low socio-economic area of Kansas City, Kansas. His class was selected for study on the principal's recommendation because of continued high rates of disruptive and other student non-study behaviors. In the principal's words, the class was, "completely out of control".

Data were recorded every day during the first hour of the school day during the reading period. The recording system was essentially that used in previous studies with individual

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pupils in which an observer recorded pupil behavior every 10 sec during a 30-min observation session, except that instead of observing the same pupil throughout the session, each was observed for 10 sec on a consecutive rotating basis. If the pupil being observed was out of his seat, or if he talked without being recognized by the teacher any time during the 10-sec interval, an "N" for non-study was scored for the interval. Otherwise, the student's behavior at the end of the 10 sec determined the rating. If he was looking out the window, playing with cards, fighting or poking a classmate, tapping pencils on books, cleaning out his desk or engaging in any of a variety of other such behaviors, an "N" was recorded. If there was no "N" behavior an "S", indicating study, was scored for the interval. Study behaviors included writing the assignment, looking in the book and answering the teacher's questions.

When every class member had been observed in turn, recording began again with the first child, until all were observed again in the same order. From this time-sampling procedure the per cent of study for the entire class was computed by dividing the number of study intervals by the total number of observation intervals and multiplying by 100.

The teacher's verbal attention, defined as a verbalization directed to a pupil or pupils, was also analyzed. The teacher's comment was recorded as a "+" if it followed appropriate study behavior, and a "-" if it followed an instance of non-study behavior. These comments were recorded when they occurred. Almost without exception those that followed study behavior were approving and those that followed non-study behavior were in the form of a verbal reprimand. See Broden (1968) for a more detailed description of these interval recording procedures.

Periodically, and at least once during every experimental condition, a second observer made a simultaneous observational record. Correspondence of the two records interval-for-interval yielded the percentage of inter-observer agreement. For this study, the percentage of agreement for class study behavior and for teacher attention ranged from 87 to 93%.

Figure 1 presents the class study rates for the various phases of the experiment and the frequency of teacher comments following study

and non-study behaviors. The broken horizontal lines indicate the mean study rates for each experimental condition.

During Baseline, the mean class study rate was 44%. The mean number of intervals in which the teacher made comments following study behavior was 1.4 per session. The class study rate rose to 90% when the helping teacher presented a demonstration lesson. The points at which the teacher met with the principal to discuss organizational procedures are indicated. After the first meeting, the teacher began writing all assignments on the board. After the third, he changed the class seating arrangements. As can be seen, these counseling procedures seemed to have some beneficial effects, but the improvement was not enough to eliminate concern.

Before the first day of the second phase, reinforcement principles and procedures used in other studies which had been effective in increasing study behavior of individual pupils were discussed with the teacher. He was shown the class baseline study record and the record of the frequency of teacher comments following study behavior. He was instructed to increase the frequency of positive comments for appropriate study. Each day he was shown the records of the class study rates and the frequency of his comments following appropriate study. Under these conditions the mean frequency of teacher comments following study behavior increased to 14.6 per session. There was a dramatic and sustained concomitant increase in study behavior to a mean rate of 72%. According to the subjective observations of the teacher, principal, and the observers, the class was under better control and classroom noise had decreased significantly.

During a brief Reversal phase, the teacher provided almost no reinforcement for study behavior. This resulted in a sharp decrease in study, which by the sixth session was well within the Baseline range. According to the subjective judgments of the teacher, principal, and observers, disruptive behaviors and high noise levels also returned.

During the Reinforcement₂ phase, an immediate sustained increase in study to a mean rate of 76% accompanied an increase of "+" teacher comments to a mean frequency of 14 per session. In the final nine sessions (43 to 52) of the Reinforcement₂ phase, the

Fig. 1. A record of class study behavior and teacher attention for study behavior during reading period in a sixth-grade classroom: Baseline—before experimental procedures; Reinforcement₁—increased teacher attention for study; Reversal—removal of teacher attention for study; Reinforcement₂—return to increased teacher attention for study; Post—follow-up checks up to 20 weeks after termination of experimental procedures.

teacher was instructed to continue reinforcing study behavior but to discontinue making comments following non-study behaviors. Up to that point, the level of these “—” comments had remained fairly constant, occurring in about 12 intervals per session. When the teacher decreased “—” comments so that they occurred in only 4.5 intervals per session there was no significant change in the class study rate. Therefore, study behavior seemed to be unaffected by comments (usually reprimands) following non-study.

Continuous observation was terminated at the end of the Reinforcement₃ phase when the primary observer, who was a student intern, returned to her university classes. Post checks taken at one-, three-, and five-month intervals, however, indicated that the relatively high rates of study and teacher attention for study were being maintained.

Teacher Two

The second teacher was also a recent college graduate and in her first year of teaching. She had been assigned to teach a first-grade class of 24 pupils in the same Kansas City, Kansas school. Again the principal and helping teacher had recommended and demonstrated procedures to the teacher for improving classroom management. The results were deemed unsatisfactory because both principal and teacher felt non-study behaviors were still too high.

Data were recorded every day the first 30 min of the morning reading period. This time was selected at the request of the teacher because of her concern about the low study rate of pupils at their desks doing “seatwork” while she was working with one or another of the three classroom reading groups in a circle at the front of the room.

The recording procedures were essentially those used with Teacher One. The percentage of agreement between observers for class study behavior and teacher attention ranged from 85 to 88%.

Figure 2 presents the class study rates for the various phases of the experiment. Mean rates for each condition are shown by a broken horizontal line. During the Baseline phase, the mean study rate of pupils at their desks not participating in reading circle was 51%. The mean frequency of intervals of teacher attention following study behavior was 1.6.

Before the first experimental phase (Reinforcement₁) reinforcement principles and procedures were explained to the teacher and she was shown the Baseline study record and the record of her verbal attention following study behavior. She was asked to increase the fre-

quency of her attention for appropriate study of pupils working at their desks. As a result of these instructions, the frequency of teacher attention following appropriate study was increased to nine per session. The mean rate of appropriate study increased to 62%. The teacher, however, was still not satisfied with this study rate. So a second condition, the study game, was introduced as a contingency.

The study game was the simple classroom game, familiar to many teachers, commonly called "7 Up". In it the teacher selects seven pupils, in this case the seven best studiers, to go to the front of the room. Then the rest of the class members put their heads down on their desks and close their eyes. The seven tip-toe around the room, touch one of the seated pupils lightly on the head and return to the front of the room. The seated pupils then

Fig. 2. A record of study rates and teacher attention for study of pupils at desks during a first-grade reading period; Baseline—before experimental procedures; Reinforcement₁—increased teacher attention for study; Reinforcement₂—study game following reading period; Reversal—removal of study game and attention for study; Reinforcement₃—reinstatement of study game and attention for study.

open their eyes. The seven who were touched stand and in turn attempt to guess which of those who are up in front touched them. If they succeed they get to go to the front of the room and be "it" on the next round. "7 Up" was renamed the "study" game. It was used because it is a favorite of elementary pupils up through the sixth grade, it is quiet, and it requires little or no teacher supervision.

The "study" game was introduced to the children before reading period on the first day of the Reinforcement₂ phase. This was a priming procedure similar to that described by Allyon and Azrin (1968). Teacher judgment was the sole criterion as to whether or not pupils studied enough to play the "study" game.

When the "study" game followed the reading period in the Reinforcement₂ phase, study rose to 79%. An unplanned reversal effect was observed in the next two sessions of Reinforcement₂ when the teacher read a story to her students after the reading period in lieu of the "study" game. By the second session, study had dropped to 50%. When the "study" game was reinstituted as a contingency for study, the class study rate rose to higher levels.

The next phase was a planned reversal in which the teacher was instructed not to reinforce study and told the pupils they could not play the "study" game. The mean study rate for Reversal was 63%.

The mean rate of study during the two days of the Reinforcement₃ phase, when the "study" game was again used as reinforcement for appropriate study, was 82%. Since these last two sessions were during the last week of the school year, the teacher was particularly pleased at the high study rate achieved and the almost complete lack of disruptive behavior in the class.

Teacher Three

In the third study, the teacher taught a class of 30 seventh graders enrolled in an afternoon unified studies (English and social studies) class in the small town of Bonner Springs, Kansas which is just outside Kansas City. The class met daily for 40 min with a 5-min break and then met for another session of 45 min.

The class was selected on the principal's recommendation because the teacher was in his first year and there was concern because

of the high rate of disruptive behaviors. These included talking without permission, being out of their seats, fighting, and throwing paper. The noise level was so high and so constant that the teacher kept the classroom door closed and the shade over the door window pulled at all times.

Observations were made daily during the first 30 min of the period before the 5-min break.

The recording system was essentially that used in the first two experiments, except that the recording interval was 5 sec rather than 10. Thus, the recorded behavior for the first pupil was that which was occurring after the first 5 sec of observation, the behavior of the second pupil was recorded after the next 5 sec of observation, and so on, so that the behavior of a different pupil was recorded at each 5-sec interval until the entire class had been observed. Then the observation sequence was repeated. Teacher attention for both study and non-study was also recorded as it occurred. Reliability checks made during each phase of the study showed an inter-observer agreement which ranged from 80 to 90%.

Figure 3 shows that the mean class study rate for the baseline period of 25 days was 47%. The mean frequency of teacher attention following study behavior was six times per session. The frequency of attention for non-study was over 20 per session; most often this attention was in the form of the command, "Let's have it quiet in here."

During the first Reinforcement phase, the teacher was asked to try to increase the amount of attention to study and decrease the amount of attention for non-study. As a result, teacher attention for study increased to nine times per session while attention for non-study decreased to about nine per session. The study rate under these conditions increased to 65%. According to the subjective judgment of the teacher, principal, and the experimenters, however, the classroom noise still remained at a disruptive level.

In the next phase (Reinforcement₂), the teacher added an additional condition. He placed a chalk mark on the chalk board if any student got out of his seat without permission or disturbed the class. For each mark placed on the board 10 sec were deducted from the five-min between-period break. If as many as 24 marks were accumulated there was to be

Fig. 3. A record of class study rates and teacher attention for study and non-study during a seventh-grade unified studies period: Baseline—before experimental procedures; Reinforcement₁—increased attention for study; Reinforcement₂—increased attention for study and shortened between-period break for disruptive behavior; Reversal—removal of punishment for disruptive behavior; Reinforcement₃—reinstatement of punishment for disruptive behavior.

no break. The teacher paused about 5 sec before placing a mark on the board. If the class became quiet and the disruptions stopped within the 5-sec period, no mark was put on the board.

Under these conditions study increased to 76%. A marked decrease in classroom noise was noticed by the observers and the teacher began to leave the door to the room open. He also, for the first time, left the room for brief periods without losing control.

After the first two days of Reversal, when punishment of noisy behavior was discontinued, the rate of study behavior dropped sharply. At the same time, teacher attention for non-study behaviors increased, as did the high level of classroom noise, according to the judgment of the observers.

During the final reinforcement phase, the study behavior rose immediately to 81% and was maintained at that level to the end of the study.

DISCUSSION

The beginning teacher faces a formidable challenge. Except for a brief exposure to student teaching, where the classroom is organized and supervised by an experienced teacher, he or she has had no pedagogical experience. Often the practice teaching is at a different grade level than the one assigned the new teacher when he gets his own classroom. Thus, on the first day of school the teacher suddenly finds himself alone, facing a classroom of 30 or so pupils with responsibility for providing them an effective learning environment. All too often he finds that he is ill-prepared to cope with the management and control problems which face him, for his professors have not specified precisely enough what procedures should be followed to bring about classroom control.

Most teachers do learn over time the techniques which are effective in getting pupils to

study, rather than to engage in non-study behaviors. Often another teacher, the principal, or in some districts a helping teacher, suggest or demonstrate ways for achieving classroom control. Even this help, however, is often ineffective. Sometimes it is well into the year before a semblance of good classroom control has been achieved. Some new teachers never make it and drop out during or after that first year. Those that do succeed, often look back and realize that both they and their pupils wasted a great deal of time and energy that first year until they "caught on" on how to manage a class.

The results of the present experiments showed that beginning teachers of three different grade levels experiencing problems of classroom control could be taught to use systematic reinforcement procedures to increase classroom study behavior even when previous attempts at assistance by principals and helping teachers had been relatively ineffective.

In the first experiment, before the changes brought about, the principal had termed the sixth-grade teacher's status as "precarious". He had contemplated replacing him during the year and certainly could not have offered him a contract for a second year if considerable improvement in control had not occurred. The teacher's awareness of his situation was reflected in a remark made to the observer after the third day of the first reinforcement phase, when an improved classroom atmosphere was already evident. He said: "You know, I think I'm going to make it." He did make it, and was offered and accepted a contract to continue teaching.

In the cases of the first- and seventh-grade teachers there was less immediate concern about imminent failure. Even so, both the teachers and the principals reported that the improvements seen in class control were dramatic.

One notable aspect of all three studies is that the teachers were able to carry out the procedures after an initial explanatory session of between 15 and 30 min at the beginning of each experimental period and daily feedback of the results. The feedback sessions were also used to provide social reinforcement to the teacher for carrying out the procedures. It seems likely that for all three teachers, the fact that their classes became more manage-

able served to reinforce and thus maintain the changes in the teacher's reinforcement behavior. They reported it was actually less work to teach using the procedures than when they had not used them. In the case of the seventh-grade teacher, this was borne out by the fact that, whereas he provided attention (mostly verbal reprimands) almost once a minute during Baseline, he was able to maintain a much higher study rate during the reinforcement phases with about half as much total teacher attention.

We are well aware that good teachers (who had "caught on") had been using these same techniques effectively long before B. F. Skinner formulated the principles of operant conditioning. Even these teachers, however, had not looked at behavior closely enough and with enough understanding to be able to specify precisely what they had done and what the ineffective teacher needed to do to bring about desired pupil behavior. These studies indicate that a behavior analysis approach will allow educators, including principals and helping teachers, to help the beginning teacher who otherwise may have been doomed to failure or at least to a fumbling and frustrating trial and error period, quickly to learn to manage his classroom through systematic use of the reinforcing contingencies available to him.

Furthermore, college instructors should now be able to give prospective teachers functional information regarding the relationship of their behavior to that of their pupils. This information can be specific and precise enough so that the new teacher can apply it in the classroom.

Finally, it should be noted that the procedures were carried out with telling effect within the existing school structure. Teacher attention, a classroom game, and access to a between-period break were used rather than reinforcers extrinsic to the situation. The procedures described (or others that are similar) which use the reinforcers already available in the schools can be employed by teachers in any classroom without added expense and without major administrative revision.

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