

*THE TEACHER AS OBSERVER AND EXPERIMENTER
IN THE MODIFICATION OF DISPUTING
AND TALKING-OUT BEHAVIORS¹*

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Disputing and talking-out behaviors of individual pupils and entire classroom groups in special education classes and regular classes from white middle-class areas and from all black poverty areas ranging from the first grade to junior high school were studied. The classroom teacher in each case acted as the experimenter and as an observer. Various means of recording behaviors were used and reliability of observation was checked by an outside observer, another teacher, a teacher-aide, a student, or by using a tape recorder. Observation sessions varied from 15 min to an entire school day. After baseline rates were obtained, extinction of inappropriate disputing or talking-out behaviors and reinforcement of appropriate behavior with teacher attention, praise and in some cases a desired classroom activity or a surprise at the end of the week brought a decrease in undesired verbalizations. A reversal of contingencies brought a return to high levels of inappropriate talking with a return to low levels when reinforcement for appropriate talking was reinstated. The experiments demonstrated that teachers in a variety of classroom settings could obtain reliable observational records and carry out experimental manipulations successfully using resources available in most schools.

A number of studies have been reported in which the systematic application of contingent teacher attention has been shown to be an effective means of modifying inappropriate school behavior. Hall, Lund, and Jackson (1968) and Broden, Bruce, Mitchell, Carter, and Hall (1970) demonstrated that teacher attention could be used effectively to modify disruptive and dawdling behaviors of individual elementary school pupils. Hall, Panyan, Rabon, and Broden (1968) showed that increasing teacher attention contingent on appropriate behavior was effective in helping beginning teachers to gain classroom control. Thomas, Becker, and Armstrong (1968) and Madsen, Becker, and Thomas (1968) showed

that positive teacher responses were more effective than reprimands or rules in maintaining appropriate classroom behavior. Broden, Hall, Dunlap, and Clark (1970) showed that social reinforcement, while resulting in some improvement, was less effective than a token reinforcement system in increasing study behavior of junior high school special education students.

While these studies have demonstrated that systematic teacher attention can be effective in improving classroom behavior, all of them employed the use of outside experimenters and observers to direct the experiments and to record and measure the behaviors. The present studies, in contrast, were carried out by teachers who acted as both the experimenters and the primary observers of the behaviors modified. They were members of a University of Kansas graduate class on the management of classroom behavior taught by the senior author.

The behaviors selected for modification were primarily "talking-out" behaviors which disrupted the class and were disturbing to the teachers. The fact that this class of behaviors is of concern to teachers is born out by the fact that 14 teachers of a total of 60 selected talking out, arguing, or other verbal outbursts as a behavior to modify when given the op-

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tion to select a disturbing behavior they wished to change.

EXPERIMENT I

Subject and Setting

Mike was a 15-year-old boy in a self-contained classroom of 15 junior high school educable mentally retarded pupils. He was paralyzed from the waist down due to a birth defect. He reportedly received a great deal of attention from other students and teachers and had been described as stubborn, self-centered, belligerent and "spoiled".

Observations

The behavior recorded was arguing or disputing with the teacher. The teacher recorded one incident of disputing behavior whenever Mike argued with the teacher, failed to comply with a teacher request within 10 sec, or shook his head in a negative manner during discussion of assignments.

Reliability of observation was computed by comparing the teacher's record with that made by a teacher-aide who observed for 2 hr on 13 different occasions distributed throughout the study. The reliability of the records for these observation sessions was found by dividing the number of disputes recorded by the observer with the lesser number by that of the observer with the greater. The mean percentages of agreement found for the various phases of the experiment ranged from 84% to 100%.

Baseline

Before employing experimental procedures, a 10-day baseline record of disputes was recorded. As is presented in Fig. 1, disputes ranged from five to nine per 7-hr school day with a mean frequency of 7.6.

Ignore and Praise₁

Beginning on the eleventh day of observation, whenever Mike began to dispute with the teacher, the teacher stopped all interaction with him by turning around and walking away. Whenever Mike began his assignment without arguing, the teacher praised him with a positive statement.

As can be seen in Fig. 1 there was a decrease in disputing behavior from the first day under

these conditions. The mean number of disputes for the entire Ignore and Praise₁ phase was one per day.

Baseline₂

In order to determine whether the change in Mike's behavior was due to the experimental conditions, a brief return to baseline conditions was instituted. Once again the teacher attended to Mike contingent on disputing and discontinued praise for not arguing. Disputing behavior increased to a mean rate of 5.4.

Ignore and Praise₂

As can be seen in Fig. 1, when extinction of arguing and praise for not arguing behavior was reinstated in the Ignore and Praise₂ phase, disputing behavior decreased to a mean rate of less than one such incident per day. Only one additional incident of disputing behavior was recorded during post-checks taken on three different days over a period of two weeks after daily recording was terminated. According to the teacher's report, six weeks after termination of the experiment, Mike's rate of disputing behavior was at such a low level that it was no longer considered to be a problem.

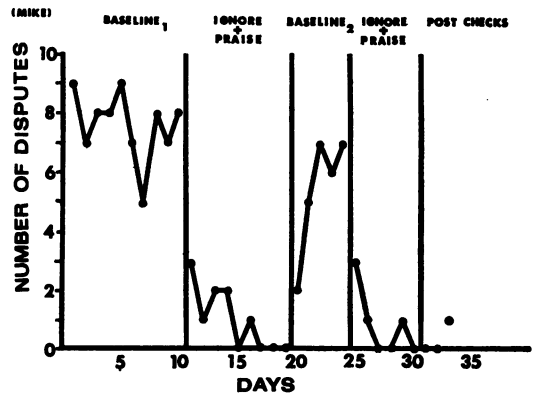


Fig. 1. A record of the disputing behavior of a junior highschool special education student. Baseline₁—prior to experimental procedures. Ignore and Praise₁—ignoring of disputing behavior and systematic attention to appropriate acceptance of assigned tasks. Baseline₂—reinstatement of attending to disputing behavior. Ignore and Praise₂—return to ignoring of disputing behavior and attention to acceptance of assigned tasks. Post Checks—periodic checks after termination of the formal experiment.

EXPERIMENT 2

Subject and Setting

Johnny, the 10-yr-old subject of the second experiment, was a member of a classroom for educable mentally retarded children. Johnny was described by the teacher as being pivotal in maintaining classroom control, in that, if he was allowed to "talk out", the class was likely to imitate his behavior.

Observations

Talking out was recorded each time Johnny verbalized without the teacher's permission. Observations were made during a 15-min period each day because the behavior was at such a high rate it would have been difficult for the teacher to record for a longer period. The teacher recorded the behavior on a wrist counter ordinarily used for tallying golf scores (Lindsley, 1968).

The reliability of recording was evaluated by making a tape recording of each observation session. The tape recorder and microphone were placed on a table near the child's desk. The volume was set at a level so that both his voice and that of the teacher were recorded. A tally was made of the tape recorded sessions and compared to the original wrist counter tally by the teacher-experimenter. An independent tally from the tape recordings was made by a fellow teacher as a further reliability check. The correspondence between these independently scored records was 100% for all phases of the experiment.

Baseline₁

Talking-out behavior was recorded over a five-day baseline period. Baseline data presented in Fig. 2 indicate a mean rate of four "talk outs" for Johnny during each 15-min period.

Contingent Attention₁

For the next five days, the teacher ignored Johnny's talking-out behavior and provided increased teacher attention when he was quiet and productive. Figure 2 indicates that talking out had decreased to zero by the fourth day of the Contingent Attention₁ phase.

Baseline₂

To be certain of a functional relationship between the change in Johnny's behavior and

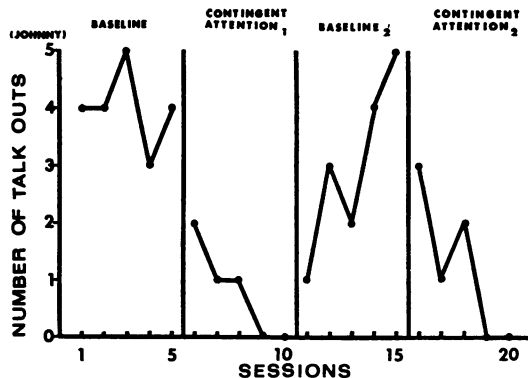


Fig. 2. A record of talking-out behavior of an educable mentally retarded student. Baseline₁—before experimental conditions. Contingent Teacher Attention₁—systematic ignoring of talking out and increased teacher attention to appropriate behavior. Baseline₂—reinstatement of teacher attention to talking-out behavior. Contingent Teacher Attention₂—return to systematic ignoring of talking out and increased attention to appropriate behavior.

the experimental procedures, a return to baseline was effected. Here, when the teacher discontinued systematic attention to quiet behavior but attended to talking-out behavior, talking-out increased in rate.

Contingent Attention₂

When the original experimental procedures were resumed, the mean rate of the "talking-out" behavior decreased to 1.2 per session. Subsequent to the return to reinforcement procedures, the teacher declared that Johnny rarely verbalized without first gaining the teacher's permission and stated that the atmosphere of the classroom was greatly improved.

EXPERIMENT 3

Subject and Setting

Jody was a 13-yr-old boy in a junior high classroom for emotionally disturbed children. Jody and the five other members of his class attended a school located in an upper middle class suburban area.

Observations

The teacher reported that not only she but also his classmates considered Jody to be disruptive. He was described as displaying a number of inappropriate behaviors such as talking out, walking around the classroom,

hitting other students, and throwing objects. talking out was of particular concern because it was emitted at an unusually high rate and increased the level of noise and caused confusion in the classroom. A previous attempt to modify the behavior by having the pupil wear a mask contingent on talking had been unsuccessful.

The teacher defined the behavior as any audible, verbal sound made without the teacher's permission. In order to be counted as a separate response, each series of sounds had to be 3 sec apart. The behavior was recorded for 30 min each day during reading period.

A tape recorder was used to determine the reliability of observation in the same manner described in Exp. 2.

Baseline₁

Figure 3 shows that the "talk outs" ranged from 36 to 98 per 30-min period with a mean of 66.5.

Feedback, Attention to Low Rates₁

In the first experimental phase, Jody was shown a graph on which were recorded the number of his talk outs. On days when the number dropped or remained at a low level, the teacher praised him. As shown in Fig. 3,

his rate of "talk outs" decreased rapidly, ranging from 4 to 12 with a mean of 7.7 per session.

Baseline₂ (B₂)

A return to pre-experimental conditions produced an increase in talking-out behavior. During B₂, the teacher attended to inappropriate verbal outbursts and ignored handraising. This resulted in an increased rate of 34 "talk outs" per session.

Feedback, Attention to Low Rates₂

When the experimental procedures resumed, there was a concurrent decrease in talking out, as shown in Fig. 3. The Feedback, Attention to Low Rates₂ condition was cut short by the termination of school.

EXPERIMENT 4

Subject and Setting

The subject of Exp. 4 was "normal" and was enrolled in a regular classroom of 27 third-grade children. Peter was a "large and very active" boy who also happened to be an only child. He was described by his teacher as a student who expected to receive the undivided attention of those about him.

Observation

The teacher selected a 20-min discussion session at the beginning of the math class as an observation period because she had noted a high rate of talking out at that time. She defined the behavior as any verbal response that accompanied hand raising before recognition by the teacher. As in Exp. 2, the teacher used a wrist golf counter to record data. In order to check the reliability of measurement she asked a capable girl who was Peter's classmate to make a simultaneous record of Peter's "talk outs". The correspondence of their records, computed by dividing the lesser daily record by the greater, ranged from 60% to 91% with a mean of 81% for all phases of the experiment (agreement dropped below 80% only once).

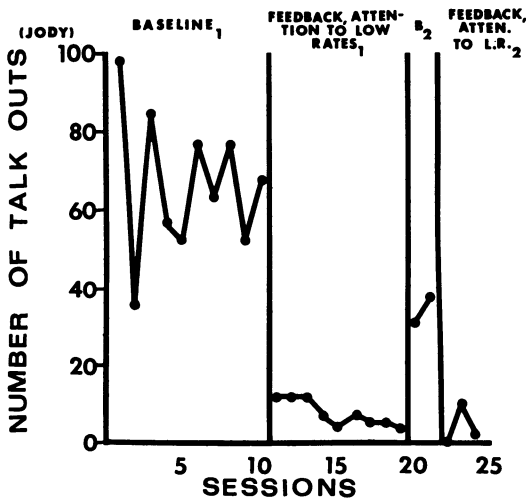


Fig. 3. A record of talking-out behavior for a junior high emotionally disturbed student. Baseline—before experimental procedures. Feedback, Attention to Low Rates₁—feedback and teacher attention to low rates of talking out. B₂—return to baseline conditions of attention to low rates of talking out.

Baseline₁

Experiment 4 data are presented in Fig. 4. The mean number of "talk outs" computed for the 10 days of Baseline₂ was 8.3 per 20-min session.

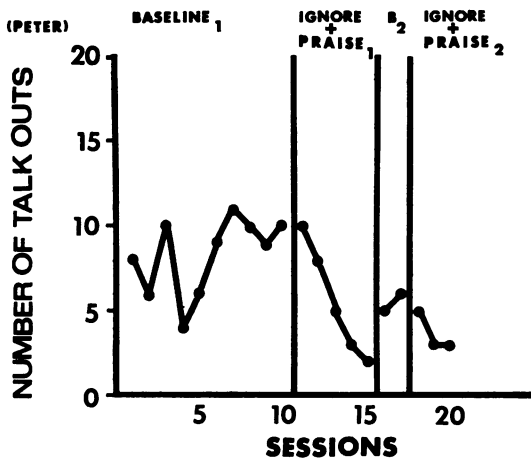


Fig. 4. A record of talking-out behavior of a "normal" third grade student. Baseline₁—before experimental procedures. Ignore and Praise₁—systematic teacher attention for appropriate handraising and ignoring of talking out during handraising. B₂—return to baseline conditions of teacher attending to talking out behavior. Ignore₂ and Praise₂—reinstatement of systematic attention to appropriate handraising and ignoring of talking out during handraising.

Ignore and Praise₁

On the eleventh day of observation, the teacher began ignoring Peter if he displayed any verbal behavior while raising his hand. She also made a point of recognizing someone that was emitting the appropriate behavior; that is, sitting quietly while raising his hand. Besides not attending to Peter's talking out she called on him immediately when he raised his hand appropriately and generally added a smile or a word of praise.

By the fourth day of Ignore and Praise₁, the rate of talking out had dropped below the lowest of that during Baseline. The mean rate of talking out was 5.5 per session and was decreasing in rate throughout the phase.

Baseline₂ (B₂)

On the sixteenth day, a return to baseline conditions was instituted. This resulted in an increase in the level of responding.

Ignore and Praise₂

When the teacher resumed the ignoring of talking out and attending to and praising of appropriate behavior a decrease was observed in the rate of Peter's inappropriate verbal behavior. By the end of the experiment the teacher reported that not only had Peter's be-

havior improved but so had that of other pupils in his class.

EXPERIMENT 5

Subjects

Thirty members of a first grade class in an all-black poverty area school served. Although the pupils were described by the teacher as generally well-behaved they often talked out to the teacher during class, even though they had often been reminded to raise their hands before speaking.

Observation Procedures

The teacher acted as the primary observer in recording "talk outs". Data were recorded daily from 9:00 to 10:00 a.m. during a discussion and seat-work activity period. A "talk out" was recorded on a tally sheet every time a pupil directed a verbalization toward the teacher without permission. Reliability checks were made by a teacher-aide assigned to the classroom. Checks made on the seventeenth and twentieth days of Baseline and on the first 10 days of the Reinforcement₁ phase yielded 100% agreement between the two observers.

Baseline₁

Baseline data were recorded over a four-week period. As presented in Fig. 5, the mean "talk out" rate during Baseline₁ was about 16 per observation session.

Praise Plus Access to Games for Handraising₁

Before the twenty-first session, the teacher told the pupils that the entire class would be allowed to play a favorite game at the end of the day if its members remembered to raise their hands before talking to the teacher. She set the criterion at 12 or fewer talk outs per day, because 13 talk outs was the lowest rate observed during baseline. She also began praising pupils when they remembered to raise their hands.

As shown in Fig. 5, the number of "talk outs" decreased throughout this phase although "talk outs" increased on the twenty-sixth and thirtieth days when visiting teachers and student teachers observed in the classroom.

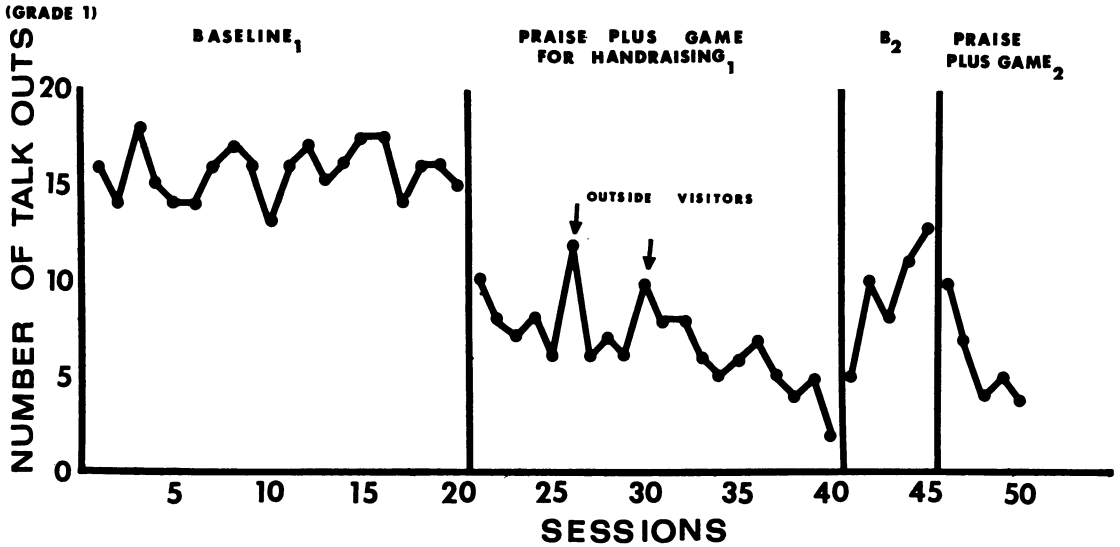


Fig. 5. A record of the number of "talk outs" during a 1-hr activity and discussion period in a first grade class of a poverty area school. Baseline₁—before experimental procedures. Praise Plus Game For Handraising₁—systematic praise and permission to play a favorite classroom game contingent on gaining permission before talking in class. Baseline₂—return to baseline conditions by withdrawing praise and the opportunity to play a game for not talking. Praise Plus Game₂—reinstatement of reinforcement for not talking out.

Baseline₂ (B₂)

At the beginning of the ninth week, praise for remembering to raise hands and the opportunity to play a game was discontinued. After the first day under Baseline₂ conditions, "talk outs" increased until by the end of the week they had reached a rate higher than at anytime during the Praise Plus Access to Games for Handraising₁ phase.

Praise Plus Access to Games₂

Praise and the opportunity to play a favorite game were reinstated during the last week of the study, which also marked the end of the school year. As can be seen in Fig. 5, the upward trend of "talk outs" observed during B₂ was reversed and "talk outs" returned to a low level.

EXPERIMENT 6

Subjects and Setting

Twenty-seven pupils in the second grade of an all-black urban poverty area school served. Although the pupils had been described by the teacher as a "good class", she was concerned because they often called out or talked to the teacher without permission. The teacher reported that she often had to scold

the class and consumed considerable time each day getting them quiet.

Observations

The behavior recorded was the number of instances in which pupils talked to the teacher without first gaining permission. One such event was recorded each time a child called the teacher's name, came to her desk to ask a question, or spoke to her from his seat without first raising his hand and being recognized by the teacher. Data were recorded daily from 8:30 A.M. to 3:30 P.M. while class was in session on a hand-held counter that the teacher placed on her desk or carried with her as she moved about the room. Reliability checks were made by an outside observer sitting at the back of the room for the morning session on the fifteenth and the thirty-seventh days. On both these occasions the number of "talk outs" recorded by the teacher was the same as that recorded by the observer.

Baseline₁

Baseline₁ data were recorded during a four-week period before the first experimental phase. As can be seen in Fig. 5, the mean level of "talk outs" for the class was about 19 per day.

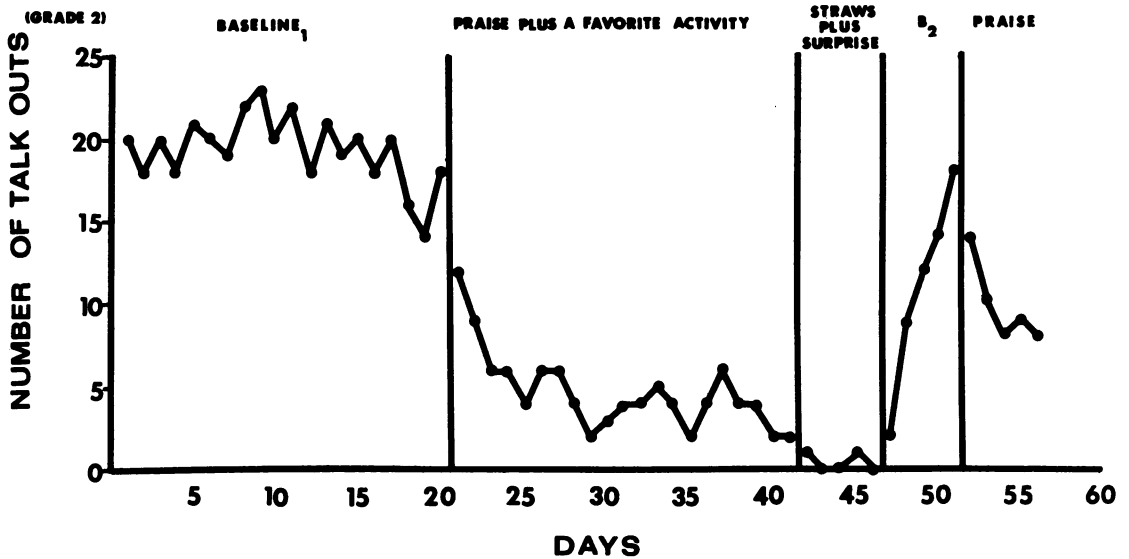


Fig. 6. A record of the daily number of "talk outs" in a second grade class in a poverty area school. Baseline₁—before experimental conditions. Praise Plus a Favorite Activity—systematic praise and permission to engage in a favorite classroom activity contingent on not talking out. Straws Plus Surprise—systematic praise plus a token system (straws) backed by the promise of a surprise at the end of the week. B₂—withdrawal of reinforcement and reinstatement of attention to talking out. Praise—systematic teacher attention and praise for handraising and ignoring of talking out.

Praise Plus a Favorite Activity₁

Beginning on the first day of the fifth week of the experiment, the teacher began praising those who raised their hands to get permission to talk. At the close of the third day of the Praise plus a Favorite Activity₁ condition, the teacher let the children choose a favorite activity because only six pupils had talked out without permission. The children worked puzzles. On subsequent days, when "talk outs" were at a low level (six or fewer), they chose to play team games.

Straws Plus Surprise

At the beginning of the ninth week the teacher gave each pupil five straws. The pupils were told that the teacher would take away a straw on any days they talked out. They were also told they would be given a surprise at the end of the week contingent on the number of straws each possessed. As can be seen in Fig. 6 (Straws Plus Surprise) only two "talk outs" were recorded during an entire school week under these conditions. At the end of the fifth day the teacher gave each pupil a piece of candy for every straw he possessed.

Baseline₂

At the beginning of the tenth week a reversal of conditions was begun. The teacher discontinued praise for appropriate handraising and began answering those who talked out in class without raising their hands.

As can be seen in Fig. 6, after the first day under these conditions there was a dramatic increase in "talk outs". By the final day of Reversal, "talk outs" had increased to near the mean Baseline₁ level.

Praise

In the final experimental phase, the teacher once again began praising those who remembered to gain permission before talking and ignoring those who talked out. "Talk outs" decreased in rate in spite of the fact that no back-up reinforcement was used and that it was the last week of school. The study was terminated by the close of school for summer vacation.

DISCUSSION

The importance of these studies is not primarily their demonstration that "talking out"

can be modified by using systematic reinforcement procedures. This has already been done (Barrish, Saunders, and Wolf, 1969; Hanley, Wolf, and Hall, 1970). Their greatest importance lies in the fact that they demonstrate that teachers can serve as experimenters as they teach, and can carry out research in the classroom as they modify behaviors that are of concern.

In all these studies the classroom teacher acted as the primary experimenter and as either the primary or the secondary observer. Previously, most related experiments have relied on outside experimenters and observers. These studies have demonstrated, however, that teachers can conduct experimental studies within the classroom while maintaining acceptable standards of scientific rigor. Although only six studies are presented here, they are just examples because all but one of the 60 class members carried out a behavioral study. Approximately 90% of the studies included checks on the agreement of measurement and experimental manipulations. These studies demonstrated that the great majority of these teachers could develop practical recording methods as well as carry out behavior modification procedures in their classrooms. Others of these studies are presented in Hall, Cristler, Cranston, and Tucker (in press); Hall, Axelrod, Foundopoulos, Shellman, Campbell, and Cranston (in press), Hall (1970), and Hall (in press).

The subjects of these studies ranged from single subjects to entire classroom groups. The pupils included "normal" children enrolled in regular classrooms of both white middle-class areas and all-black economically depressed areas. Others were pupils who had been classified as mentally retarded, or emotionally disturbed. They ranged in grade level from the first grade to junior high school.

The recording techniques varied from a simple paper and pencil tally to hand and wrist counters and tape recorders. In some cases, where the behavior was of a relatively low frequency, the behavior was recorded over the entire day. In cases where the behavior was of a relatively high frequency, shorter time samplings were used. This point is stressed because it would be extremely difficult for a teacher to tally a high-rate behavior over long periods while teaching, yet it is not too difficult to sample such a behavior over a

relatively short period. In experiments such as Exp. 2 and 3, a short time sample was adequate to indicate the levels of behavior during the various experimental phases.

Various means of checking the reliability of measurement were employed by the teachers. In one case the senior author acted as a second independent observer. In other cases, the teachers used a pupil, a teacher-aide, a tape recorder, and a fellow teacher to check on the reliability of measurement. This demonstrated that teachers can obtain acceptable measures of reliability using resources that are intrinsic to the regular school environment.

In all of these studies, the teacher used a combination of extinction for inappropriate talking and some sort of reinforcing event for appropriate behavior to bring about the desired change. In Exp. 3, pupil knowledge of results was probably also a factor during the reinforcement phases. In Exp. 5, the teacher used privileges and a classroom game to reinforce low levels of talking out, while the teacher in Exp. 6 used a token reinforcement system backed by a surprise at the end of the week to achieve a very low level of talking out.

The fact that talking out is a problem of concern to teachers is borne out by the fact that some form of talking-out behavior was selected for modification by 23% of those enrolled in the behavior management classes that produced these studies. The fact that this behavior has been selected as a target behavior by other investigators, as mentioned above, also indicates that it is a behavior of general concern to teachers.

In summary, behavior modification shows great promise as an approach for helping teachers manage their classrooms. The development of techniques that allow teachers to measure reliably the behaviors that concern them without drawing upon an outside observer will greatly increase their applicability because most teachers do not have a trained observer available. These studies suggest that teachers can develop effective observation and reinforcement procedures, can carry out experimental manipulations, and therefore can use behavioral analysis as a tool in their classrooms.

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