TRAINING TEACHERS IN GENERALIZED WRITING
OF BEHAVIOR MODIFICATION PROGRAMS
FOR MULTIHANDICAPPED DEAF CHILDREN

JOEL HUNDERT

THE SIR JAMES WHITNEY SCHOOL, BELLEVILLE

In contrast to previous studies where teachers were instructed how to implement behavior modification programs designed by an experimenter, teachers in the present experiment were taught how to write as well as implement behavior modification programs. The generalized effects of two training conditions on teacher and pupil behaviors were assessed by a multiple baseline design where, following baseline, two teachers of multi-handicapped deaf children were taught to set objectives and measure pupil performance (*measurement training*). Later, through a training manual, they learned a general problem-solving approach to writing behavior modification programs (*programming training*). After both training conditions, experimenter feedback was given for teachers' application of training to a target behavior for one pupil and generalization was measured across target behaviors for the same pupil and across pupils. It was found that measurement training had little general effect on either teacher behavior or pupil behavior. However, after programming training, teachers increased their program writing and correct use of behavior modification procedures and generalized this training across pupils and target behaviors. Along with these effects, there was improvement in pupil behaviors. Possible explanations for generalized effects of teacher training were considered.

DESCRIPTORS: teacher training, generalization, behavior modification programs, deaf children

There is little doubt that teachers can be taught successfully to apply behavior modification procedures, especially if they practice those procedures in the classroom, rather than just read or talk about general principles (Bowles & Nelson, 1976; Gardner, 1972; McKeown, Adams, & Forehand, 1975). After instruction, teachers may be able to apply the trained procedures to new situations (Koegel, Russo, & Rincover, 1977) and continue using the procedures over time (Parsonson, Baer, & Baer, 1974).

In the cited studies, teachers were taught to implement behavior modification procedures designed by the experimenter. To manage a variety

of children and target behaviors adequately, some teachers may need to know how to develop as well as how to implement behavior modification procedures. Without programming training, teachers may become proficient in the application of a few procedures which may not work in all situations despite correct application (cf. Herbert, Pinkston, Hayden, Sajwaj, Pinkston, Cordeau, & Jackson, 1973; Plummer, Baer, & LeBlanc, 1977; Solnick, Rincover, & Peterson, 1977).

There is some suggestion that individuals can learn to write behavior modification programs, at least for some problems. In Hall's "responsive teaching" workshop, teachers successfully conducted their own studies in their classroom after 16 weeks of instruction in practical measurement and basic learning theory (Hall & Copeland, 1972). Unfortunately, the evaluation of this training was limited to anecdotal

---

The author thanks Darlene MacDonald and Nancy Mullins for their cooperation and support in conducting this study. Requests for reprints should be addressed to Joel Hundert, Children's Services, Suite 305, 1055 Princess Street, Kingston, Ontario, Canada K7L 5T3.

dotal report. Fawcett and Fletcher (1977) used a training manual to teach nonprofessionals to write instructional packages for community service tasks conducted by neighborhood residents. Although this study investigated the development of programs for specific and relatively simple tasks (e.g., how to accept a compliment), its results are encouraging.

The present experiment investigated a "training package" to instruct teachers of multihandicapped deaf children to write behavior modification programs. The "package" consisted of a written training manual designed to instruct teachers in a general problem-solving strategy for writing behavior modification programs.

One component of the teacher training "package" was instruction in setting objectives and measuring pupil performance. Measurement training may be sufficient to increase teachers' use of behavior modification procedures without additional instruction in program writing. Perhaps after keeping track of pupil behavior, teachers will spontaneously alter their teaching procedures to produce a desired increase in pupil performance. Reports of "baseline cure" (Forehand, 1973) and teacher reactivity to measuring pupil behavior (Hay, Nelson, & Hay, 1977) support this possibility. The separate effects of training teachers to set objectives and measure pupil performance were also investigated in the present experiment.

METHOD

Teacher Trainers

Two female teachers of special education classes at a large provincial school for the deaf participated in the experiment. Teacher 1 was 27 years old, and had 4 years of teaching experience. Teacher 2 was 31 years old and had 7 years of teaching experience. Both had obtained a general teaching certificate plus a specialist's certificate in deaf education. Teacher 2, in addition, had completed an undergraduate university program. Neither, however, had formal training in behavior modification or individualized in-

struction. They volunteered for in-service training routinely offered at the school by the experimenter. Exact details of the experiment were withheld until a debriefing session conducted at the end of the study. At that time, teachers' consent for the release of the results of the experiment was obtained.

Pupils and Setting

Teachers taught classes of three "multihandicapped" pupils who were characterized by behavioral, emotional, and learning problems in addition to a tested hearing loss. The two boys and one girl in each classroom ranged in age from 8 yr 3 mo, to 10 yr 4 mo, with an average age of 9 yr 7 mo. All pupils were diagnosed by previous agencies as autistic, mentally retarded, or emotionally disturbed, and were described as being untestable on standardized tests. They had been excluded from regular classes at the school because of severe learning and behavior problems (e.g., self-injurious behaviors, temper tantrums). Two pupils per class were selected by each teacher to participate in this study. Selections were based on teachers' judgment of pressing pupil problems.

Classes were held each weekday from 9:00 a.m. to 3:30 p.m. within the elementary school for the deaf. Pupils received instruction in basic academic skill areas such as spelling, writing, reading, arithmetic, and language skills. Most of this instruction consisted of the teacher presenting a "lesson" to the pupils as a group, followed by assigned seatwork. The teacher used "total communication," consisting of a combination of manual signs, finger-spelling, and written and verbal instructions to converse with pupils.

Target Pupil Behaviors

Prior to the experiment, each teacher was asked to select two target behaviors for one pupil and one target behavior for the second pupil participating in the experiment. Experimenter feedback was given for the application of training to a focal target behavior and generalization measured for the two other target behav-

iors for each teacher. Teacher 1 selected Laura: on-task and writing; and Art: on-task. Teacher 2 selected Linda: head-shaking and spelling; and Robbie: on-task. To be scored as being on-task, a pupil had to be completing a seatwork assignment, with pencil to paper, in-seat, and head lowered. The pupil raising his hand for the teacher's assistance and looking at the teacher when help was provided were also scored as being on-task. Writing was scored by dividing the number of correctly formed words (all letters present and in correct order, easily discernible and within line boundaries) on a penmanship exercise by the total number of words written. Head-shaking was defined as any rapid back-and-forth movement of the head. Spelling was scored by dividing number of correctly spelled words (all letters present and in correct sequence) by total number of items presented (pictures corresponding to the words to be spelled).

Measurement

A 15-min experimental session was conducted daily in each classroom when teachers attempted to teach one of the three target behaviors. During these sessions, one of two trained observers scored pupil behavior in the classroom. On-task behavior and head-shaking were measured on an interval recording basis. Using a cued audiotape and prepared data sheet, an observer watched a pupil for 20 sec and during the subsequent 10 sec recorded whether or not the behavior had occurred. An observer recorded on-task behavior if it occurred throughout the 20-sec period with no more than one 3-sec pause. Head-shaking was recorded if it was observed at any time during the 20-sec observation period. At the end of a 15-min session, the pupil was given a score between 0 and 30 on a target behavior based on the number of observation intervals in which the target behavior was judged to have occurred. The number was divided by 30 and multiplied by 100 to give a percent score.

During experimental sessions for writing and spelling, observers measured pupil performance

on assigned seatwork. Pupils worked on an assignment for 15 min and the number of correct and incorrect responses were marked by an observer. A percent score was calculated by dividing the number of correct responses by the total number of responses and multiplying by 100.

Assessment of Teachers' Writing of Behavior Modification Programs

Teachers' writing of behavior modification programs was measured during separate writing sessions immediately following baseline and each of the two training conditions. Writing sessions were about 20 min in length and held in the teacher's classroom after school. The experimenter asked the teacher to give a written description of her current approach to teaching each of the three target behaviors. The teacher entered this information on forms which contained nine headings: objectives, measurement, curriculum, instructional materials, consequences for correct responses, consequences for errors, prompts, instructions, handling disruptions.

Completed forms were scored at the end of the experiment by a judge, uninformed of the experimental conditions in effect and the order in which forms were written. The judge was a professional staff member at the school, knowledgeable about applied behavior analysis, and trained in the scoring procedure. This training consisted of instructions for scoring each of the nine categories and approximately 2 h of practice applying the scoring to hypothetical written behavior modification programs.

Teachers' writing was rated under nine categories corresponding to the headings on the forms. (Detailed response definitions for measuring each category of teacher writing of behavior modification programs are available from the author.) Each category was rated as "correct" if all criteria were fulfilled, "incorrect" if one or more criteria were unfulfilled, and "not applicable" if not used. For example, to be scored as correct under the category of "objectives," a teacher had to have written a statement of the program's objective that clearly specified the

pupil's behavior to be achieved, under specific conditions and at specific mastery criteria. Each completed form was given an overall score corresponding to the number of correct categories divided by the number of correct and incorrect categories and multiplied by 100.

At the end of the experiment, the reliability of scoring teachers' writing of behavior modification programs was calculated by the experimenter independently scoring all 18 completed written forms. Interscorer agreement was calculated by the Pearson r correlation coefficient between the two ratings. The agreement was .94.

Assessment of Teachers' Use of Behavior Modification Procedures

During experimental sessions, teachers' use of selected behavior modification procedures was recorded. The specific teacher behavior measured depended upon the target behavior being taught. For sessions of on-task behavior and head-shaking, teachers' use of approval, prompts, and instructions were measured. For sessions of writing and spelling, these three behaviors, plus teachers' use of correction, were recorded. These behavior categories were defined as follows:

Approval. The teacher indicated pleasure or approval toward a child immediately following (within 3 sec) a correct response or desired behavior. Approval may have taken the form of manual signs, oral statements (e.g., "Good boy," "I like the way you are working"), or physical contact (e.g., hug, pat on the back).

Prompt. The teacher delivered a hand signal (e.g., pointing to the pupil's work) or a manual sign and oral instruction (e.g., "Okay, Laura, get to work") to keep the pupil on task. The prompt was given quickly with a minimum amount of attention.

Instructions. The teacher delivered a manual sign and oral instruction describing how to perform a presented task. (e.g., "Add 2 and 3"). Instructions were sufficiently clear to be easily discernible to the observer.

Correction. Within 3 sec following a pupil's error, the teacher provided minimal instruction

for the pupil to respond correctly and readministered the same or equivalent item.

An observer scored teacher and pupil behaviors simultaneously on the same 20-sec observation and 10-sec recording basis. For each observation interval, the observer judged a teacher's behavior as being "correct" if the procedure was used and all aspects of the definition were fulfilled. If the procedure was used with one or more aspects of the definition unfulfilled or if the procedure was not used when obviously called for in the situation (e.g., failure to use correction after a pupil's error) the category was rated as "incorrect." If the category was not used, it was rated as "not applicable."

At the end of the session, a composite score of teacher use of behavior modification procedures was calculated. First the total number of correct scores within each category was divided by the respective total number of correct and incorrect scores. This number was multiplied by 100 to give a percent score per category. These percentages were then averaged to give a composite index of the teachers' behavior during the session.

Teacher Rating

Changes in teachers' ratings of pupils participating in the experiment were assessed by the administration of Part II of the *Adaptive Behavior Scale* (Nihira, Foster, Shellhaas, & Leland, 1974). On this test, teachers rated a child on behaviors (e.g., "hitting") under 12 categories (e.g., "violent and destructive behaviors") as not occurring, scored as 0; occurring occasionally, scored as 1; or, occurring frequently, scored as 2. Scores were summed across categories to give a total for each pupil. Each teacher rated pupils on 12 behavior problems before and after the study. As a comparison, the other pupil in each class who did not participate in the experiment was also rated.

Observer Training and Reliability

Two teacher aides released from their regular duties served as observers in the classroom. Two

weeks prior to the experiment, observers were trained to score teacher and pupil behaviors. With written definitions of behaviors and prepared data sheets, observers practiced rating 10, 5-min videotape samples of teacher and pupil behavior in both classrooms. Feedback and additional instruction were given to the two observers until both of them achieved 90% agreement with the experimenter on two consecutive videotape samples.

To minimize observer bias and drift, observers were uninformed of the purpose of the experiment and the experimental conditions in effect. In addition, observers were rotated between the two classes on the average of every third session.

Reliability of observer ratings was assessed by independent reliability checks conducted by the experimenter on the average of every third session. During these checks the experimenter scored pupil and teacher behaviors simultaneously with, but independent of, the observer. An agreement was counted if both the experimenter and the observer marked the same behavior during the same observation interval. Interobserver agreement was calculated by a formula proposed by Harris and Lahey (1978) to reduce distortion due to chance agreement. This formula was: $\text{weighted interobserver agreement} = (\text{OXU}) + (\text{NXS}) \times 100$ where: O is the number of occurrence agreements plus the number of occurrence disagreements; U is the proportion of intervals not scored by Observer 1 plus the proportion of intervals not scored by Observer 2 divided by 2; N is the number of nonoccurrence agreements divided by the number of nonoccurrence agreements plus the number of nonoccurrence disagreements; S is the proportion of intervals scored by Observer 1 plus the proportion of intervals scored by Observer 2 divided by 2.

For pupil behaviors, the overall mean percentage of agreement was 91.3% with a range of 87.4% (for Linda's head-shaking) to 100% (for Laura's spelling). For teacher behavior, the overall mean percentage of agreement was

93.7% with a range of 90.1% (for instructions) to 97.6% (for corrections).

Measurement Training

Teachers were given 25 typed pages of written instructions divided into discrete units on how to set measurable objectives, how to observe and record behaviors, and how to display results on a graph. Each unit began with a brief rationale of the activity being taught, instructions for its application, and was followed by examples. At the end of each unit were usually three criteria-based exercises in which teachers applied the learned activity to paper and pencil tasks. The exercises depended upon the activity being taught. For example, for objective settings, teachers were presented with 10 written objectives and asked to indicate which were measurable.

Two 1-h measurement training sessions with individual teachers were held after school. During these sessions, the experimenter marked completed exercises and gave a prepared alternative form of an exercise if the teacher failed to meet a specified criterion. In addition, the experimenter provided corrective tutoring to teachers when needed. This tutoring consisted of answering questions teachers raised concerning the material they had read and providing additional verbal instruction to correct errors made on exercises.

On the first two sessions following this training, the experimenter reviewed each teacher's objectives and measurement procedure developed for a focal target behavior, suggested changes where necessary, and praised correct application of training.

Programming Training

Teachers were taught to write behavior modification programs by completing a 82-page manual. Copies of the teacher training manual are available from the author at a cost of \$10.00 to cover duplicating and mailing expenses. The manual was divided into five discrete learning units where each unit consisted of measurable

objectives, written instructions in which rationale, description of behavioral procedures, and examples were included and criteria-based paper and pencil exercises. Basically, the manual was an attempt to teach teachers a problem-solving strategy to writing behavior modification programs in which they (a) defined classroom problems in measurable terms, (b) self-evaluated their teaching approach to identify variables that may have contributed to the problem, (c) devised a solution based on altering identified teaching variables, and (d) implemented and evaluated the solution.

The first unit consisted of a description of a behavior analytic approach to understanding pupil problems and deriving solutions. The second unit was entitled "conditions for good learning" and identified seven teaching variables (curriculum, instructional material, consequences for correct or desired behavior, consequences for errors, prompts, instructions, and handling of disruptive behaviors) that affect pupil behaviors. Included in those instructions was an explanation of each teaching variable and a description of its correct application. Instructions for each teaching variable were followed by three exercises. The first consisted of approximately five "fill-in-the-blank" questions on the content of instruction; the second, of discrimination training with five examples of good and poor application of the teaching variable; and the third, of an exercise in which teachers corrected the poor examples.

During training sessions, the experimenter scored completed exercises, assigned prepared alternative exercises if a teacher failed to meet a performance criterion and provided corrective tutoring for errors on the exercises or questions teachers presented on the material. Approximately 25% of a training session was used for corrective tutoring.

The remaining three units of the manual were designed to help teachers to write a behavior modification program for their focal target behavior based on an analysis of errors in their

current instructional approach. First, teachers scored their method of dealing with the focal target behavior before training, using a checklist of response definitions for each of the seven teaching variables. These response definitions were identical to those used by the judge to score teachers' writing of behavior modification programs. A category on the checklist was scored "correct" if all criteria were fulfilled, "incorrect" if one or more criteria were unfulfilled, or "not applicable" if not used. Teachers then derived corrections to each teaching variable scored as "incorrect" and, based on these corrections, wrote a behavior modification program for the focal target behavior. On request from a teacher, the experimenter gave verbal comments on this program. These comments were limited to indication of errors and praise of correct application of training. No suggestions for alternative strategies for writing the program were given. No instructions or feedback was given for writing programs for the other two target behaviors.

Experimental Design

Experimental effects were analyzed by a multiresponse baseline design (Birnbauer, Peterson, & Solnick, 1974) where, following baseline, the introduction of training was staggered across the two teachers. During baseline, teachers taught target behaviors under normal conditions. They worked on one target behavior for a specific number of consecutive sessions before attempting to teach the next target behavior for the same period of time and finally the third target behavior.

Following baseline, each teacher underwent measurement training, after which they again attempted to teach each of the three target behaviors in turn, for a particular number of consecutive experimental sessions but in a difference sequence to control for "order effects." In the final condition, teachers completed programming training and received experimenter feedback on the program written for the focal

target behavior. Teachers then attempted to teach each of the target behaviors in turn, in a difference sequence.

RESULTS

Teacher Behavior

Writing of behavior modification programs. Results of teachers' writing of behavior modification programs for each target behavior are shown in Table 1. After baseline, all teachers' programs were scored at 0% correct writing. After measurement training, these results increased to between 11% and 33% due mainly to teachers' programs receiving correct scores in categories of objectives and measurement. There was a large increase in teachers' program writing after programming training to scores between 78% and 100%. Teachers' writing increased for all target behaviors, not only the one for which they received experimenter feedback.

Use of behavior modification procedures. As shown in Figure 1, during baseline teachers rarely used behavior modification procedures correctly. All scores were below 40% and sev-

eral points were at 0%. Training teachers to measure pupil behavior had little effect on these low scores. During measurement training, teachers' use of behavior modification ranged between 0% and 32% with a mean of 9.8%. There was a marked increase in the use of behavior modification procedures after programming training. Teachers' percent score during this condition increased to levels above all previous points to an average of 76.2%. This increase in teachers' composite use of behavior modification procedure represented increments in all component categories.

Pupil Performance

Effects of teacher training on pupil performance can be seen in Figure 2. Data points represent percent occurrence of target behaviors during experimental sessions. During baseline, target behaviors occurred at low levels with Laura: on-task at a mean of 36.3% per session, writing at 16.7%; Art: on-task, at 41.0%; Linda: spelling at 1.7%; and Rob: on-task at 29.5%. Linda: head-shaking was observed to occur at a mean of 85.5% per session.

There was little change in pupil performance after teachers completed measurement training. The exception was Rob: on-task behavior which increased from a mean of 29.5% per session during baseline to 50.3% per sessions.

Pupil performance increased markedly after teachers were trained to write behavior modification programs. Laura: on-task behavior increased to a mean of 95.5% per session, writing to 79.7% per session; Art: on-task behavior to 96.0% per session. Linda's head-shaking declined to 10.0%.

Teacher Rating

Pre-, postexperiment change in teachers' attitude toward pupils was measured by the difference in teachers' total rating on the *ABS* for experimental and nonexperimental pupils. Results for the four pupils who participated in the experiment were compared with results for the

Table 1

Teachers' percent correct writing of behavior modification program for target behaviors during a session following baseline, measurement training, and programming training.

	Baseline	Measurement Training	Program- ming Training
Teacher 1			
Laura:			
On-task	0	33	89
Art:			
On-task	0	11	100
Laura:			
Writing	0	22	100
Teacher 2			
Linda:			
Head-shaking	0	22	78
Rob:			
On-task	0	22	89
Linda:			
Spelling	0	22	89

Fig. 1. Teachers' percent correct use of behavior modification procedures per session, for Teacher 1, Laura: on-task, Art: on-task, Laura: writing; and for Teacher 2, Linda: spelling, Linda: head-shaking, Rob: on-task, after measurement training and programming training.

other two pupils in the classes who did not participate. Prior to the experiment, the four experimental pupils received a rating of 57.7, compared to 55.0 for the two nonexperimental pupils. After the study, the experimental pupils' rating declined to an average of 39.3. There was little change in the teachers' rating of nonexperimental pupils, which remained at an average of 53.5.

At the end of the experiment, teachers were asked to indicate their satisfaction with the

training. They ranged on a 5-point scale such items as the applicability of training to their classroom, the time cost, the effect of training on their enjoyment of teaching, and the benefits to pupils. Both teachers rated the training highly on all items with all answers assigned a rating of 4 or 5. Applicability of training to the classroom received a mean rating of 4.0, ability to design remedial programs for any problem received a mean rating of 4.5, benefit to students received a mean rating of 5.0, acceptability of

Fig. 2. The percent occurrence of pupil performance per session for Teacher 1, Laura: on-task, Art: on-task, Laura: writing; and for Teacher 2, Linda: spelling, Linda: head-shaking, Rob: on-task, after measurement and programming training.

time demands of training received a mean rating of 4.5, enjoyment of training received a mean score of 5.0, and overall value of training received a mean rating of 4.5.

DISCUSSION

Previous research has demonstrated that individuals can be taught to apply experimenter-designed procedures and, perhaps, to generalize

the use of these procedures to new situations (Gladstone & Sherman, 1975; Koegel, Glahn, & Nieminen, 1978; Koegel et al., 1977; Parsonson et al., 1974). The present experiment differed from these studies in its aim to instruct teachers to write as well as to implement behavior modification programs. Each teacher learned a general problem-solving approach to writing behavior modification programs and received feedback on the program written for a focal target behavior. No feedback was given

for the other two target behaviors. Teachers increased their correct program writing for all target behaviors, including the two for which they did not receive direct instruction. As teachers increased their correct writing, they also increased their correct use of behavior modification procedures. These changes in teacher behaviors produced concomitant changes in pupil performance.

Teachers did not simply apply a trained set of procedures to all target behaviors. Each behavior modification program was unique from the others in its composite procedures, even when the same teacher wrote programs for similar target behaviors. For example, Teacher 1 wrote a successful program for Laura: on-task behavior using prompting, performance feedback, and contingent free time. For Art: on-task behavior, the same teacher used graduated assignments, mastery criteria, and response cost. Information concerning these procedures was contained in the training manual. Teachers used this information and an evaluation of errors to design the new programs to deal with the target behaviors.

It would be difficult to make general statements about teacher training effects based on these results. The small number of pupils and teachers who participated, plus the severe nature of pupils' handicap, may limit the generality of the findings. In larger classes with more normal pupils, a different type of training may be needed.

The replicability of these procedures by a person other than the author is unknown. One aspect of the teacher training procedure was corrective tutoring where the experimenter answered teachers' questions concerning the material they had read and corrected errors on exercises. It is unknown how much this activity or any other aspects of the experimenter's interactions with the teachers may have contributed to the experimental results.

The effects of instruction in writing behavioral programs were not investigated separately

from the effects of the actual writing of the programs per se. Changes in teachers' use of behavior modification procedures may have been due to general principles teachers picked up from the training manual and experimenter tutoring rather than the specific activity of writing behavior modification programs. Although the experimental analysis of replicable treatment packages may be a legitimate undertaking (Fawcett & Fletcher, 1977; Risley, Clark, & Cataldo, 1976), it is unclear which specific components of the total instructional "package" used in this study were necessary. The only training component assessed was instruction in performance measurement. It was found that after teachers began to measure pupil performance, there was no therapeutic change in their behavior. A similar result was reported by Hay et al. (1977). They found that after training to record pupil classroom behavior, teachers changed their behavior, but not in ways that improved pupil behavior.

Training teachers to measure pupil performance may not have been sufficient to produce general therapeutic effects, but without measurement training, teachers may not have seen the need to implement behavior modification programs or persisted with the programs once they were in effect. A study by Weinrott (1979) tested this possibility. Two groups of teachers were trained in an identical intervention strategy for disruptive behaviors but one group received additional instruction in tracking children's behaviors. No differences were found between groups in either teacher or child behaviors.

In the present study, teachers were taught a general method for formulating solutions to classroom problems rather than a set of solutions from which to select for particular situations. In writing a program, teachers defined a pupil's problem in behavioral terms, measured its occurrence, and examined the functional relationship between changes in teaching and desired improvement in pupil performance. There may be several advantages to training

some staff in systematic methods for analyzing problem situations and deriving solutions.

First, less instructional time is involved than in teaching general principles or a number of behavioral techniques. For example, Hall and Copeland (1972) conducted their responsive teaching workshop in a total of 48 h spread over 16 wk. Koegel et al. (1977) trained teachers of autistic children to use behavior modification procedures in a total of 25 h. These durations are compared with 12 h meeting time with each teacher for instruction in the present study. Besides differences in the content of instruction, the shorter training time was likely due to the fact that training was conducted with individual teachers rather than groups of teachers as was the case in the Hall and Copeland (1972) and Koegel et al. (1977) studies.

Second, even the most widely used behavior modification procedure may not work in all situations, despite correct application (Herbert et al., 1973; Plummer et al., 1977) and there may be situations for which trained procedures are not applicable. Here, training in a method to derive solutions may have wider generality than training in the application of set solutions. This generalization strategy is consistent with Stokes and Baer's (1977) technique called mediated generalization. According to these authors, one way to promote generalization is to establish a mediating response that is likely to be used in untrained situations and that effectively alters an individual's behavior.

A variety of other training procedures differing in the method and content of instruction have been reported to be effective in teacher training. These include the use of workshops (Hall & Copeland, 1972), modeling and feedback (Gladstone & Sherman, 1975), role-playing (Jones & Eimers, 1975) and videotape examples of trained activity (Koegel et al., 1977). The effectiveness of alternative instructional approaches may depend on such factors as the goal of instruction, target problems, teacher and pupil populations, and practical training con-

straints in the situation. The relative benefits and cost of teacher training for specific instructional problems would be relevant research questions.

REFERENCES

- Birnbaumer, J. S., Peterson, C. P., & Solnick, J. V. The design and interpretation of studies of single subjects. *American Journal of Mental Deficiency*, 1974, **79**, 191-203.
- Bowles, P. E., Jr., & Nelson, R. O. Training teachers as mediators: Efficacy of a workshop versus the bug-in-the-ear technique. *Journal of School Psychology*, 1976, **14**, 15-26.
- Fawcett, S. B., & Fletcher, R. K. Community applications of instructional technology: Training writers of instructional packages. *Journal of Applied Behavior Analysis*, 1977, **10**, 739-746.
- Forehand, R. Teacher recording & deviant behavior: A stimulus for behavior change. *Journal of Behavior Therapy and Experimental Psychiatry*, 1973, **4**, 39-40.
- Gardner, J. M. Teaching behavior modification to nonprofessionals. *Journal of Applied Behavior Analysis*, 1972, **5**, 517-521.
- Gladstone, B. W., & Sherman, J. A. Developing generalized behavior modification skills in high school students working with retarded children. *Journal of Applied Behavior Analysis*, 1975, **8**, 169-180.
- Hall, R. V., & Copeland, R. E. The responsive teaching model: A first step in shaping school personnel as behavior modification specialists. In F. W. Clark, D. R. Evans, & L. V. Hamerlynck (Eds.), *Implementation of behavioral programs for schools and clinics*. Champaign, Ill.: Research Press, 1972.
- Harris, F. C., & Lahey, B. B. A method for combining occurrence and nonoccurrence interobserver agreement scores. *Journal of Applied Behavior Analysis*, 1978, **11**, 523-527.
- Hay, L. R., Nelson, R. O., & Hay, W. M. The use of teachers as behavioral observers. *Journal of Applied Behavior Analysis*, 1977, **10**, 345-348.
- Herber, E. W., Pinkston, E. M., Hayden, M. L., Sajwaj, T. E., Pinkston, S., Cordeau, G., & Jackson, C. Adverse effects of differential parental attention. *Journal of Applied Behavior Analysis*, 1973, **6**, 15-30.
- Jones, F. H., & Eimers, R. C. Role playing to train elementary teachers to use a classroom management "skill package." *Journal of Applied Behavior Analysis*, 1975, **8**, 421-433.
- Koegel, R. L., Glahn, T. J., & Nieminen, G. S. Generalization of parent-training results. *Journal of Applied Behavior Analysis*, 1978, **11**, 95-109.

- Koegel, R. L., Russo, D. C., & Rincover, A. Assessing and training teachers in the generalized use of behavior modification with autistic children. *Journal of Applied Behavior Analysis*, 1977, **10**, 197-205.
- McKeown, D., Jr., Adams, H. E., & Forehand, R. Generalization to the classroom of principles of behavior modification taught to teachers. *Behaviour Research and Therapy*, 1975, **13**, 85-92.
- Nihira, K., Foster, R., Shellhaas, M., & Leland, H. *AAMD adaptive behavior scale*. Washington, D.C. American Association on Mental Deficiency, 1974.
- Parsonson, B. S., Baer A. M., & Baer, D. M. The application of generalized correct social contingencies: An evaluation of a training program. *Journal of Applied Behavior Analysis*, 1974, **7**, 427-437.
- Plummer, S., Baer, D. M., & LeBlanc, J. M. Functional technology for the normal middle class family and an effective alternative. *Journal of Applied Behavior Analysis*, 1977, **10**, 689-706.
- Risley, T. R., Clark, H. B., & Cataldo, M. F. Behavioral technology for the normal middle class family. In J. Mash, L. A. Hammerlynck, & L. C. Handy (Eds.), *Behavior modification and families*. New York: Brunner/Mazel, Inc., 1976.
- Solnick, J. V., Rincover, A., & Peterson C. R. Some determinants of the reinforcing and punishing effects of timeout. *Journal of Applied Behavior Analysis*, 1977, **10**, 415-424.
- Stokes, T. F., & Baer, D. M. An implicit technology of generalization. *Journal of Applied Behavior Analysis*, 1977, **10**, 349-368.
- Weinrott, M. R. The utility of tracking child behavior. *Journal of Abnormal Child Psychology*, 1979, **7**, 275-286.

Received March 5, 1981

Final acceptance June 15, 1981