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An Evaluation of a Videotape Discrimination Training Program to Teach One-to-One Training Skills

Norman L. Schultz

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AN EVALUATION OF A VIDEOTAPE DISCRIMINATION TRAINING
PROGRAM TO TEACH ONE-TO-ONE TRAINING SKILLS

by

Norman L. Schultz

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Submitted to the
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Norman L. Schultz

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INTRODUCTION

The demand for trained staff for pupils who are severely mentally impaired (SMI) has increased since the enactment of Public Law 94-142; a law requiring that SMI pupils receive educational opportunities.

In response to this demand, behavior analysts have developed rapid and effective training procedures to teach behavior modification skills to institutional attendants (Gardner, 1972), grandparents (Fabry & Ried, 1978), teachers (Horton, 1975; Koegel, Russo, & Rincover, 1977), and general paraprofessionals (McCarthy, Note 1).

Successful training procedures have included modeling and feedback (Gladstone & Spencer, 1977; Nay & Kerkof, 1975), and the combination of a training manual and videotapes showing correct and incorrect use of the procedures (Horton, 1975; Koegel et al., 1977).

Koegel et al. reported changes in both pupil and tutor behaviors, but the training was time consuming (up to 25 hours). Horton developed a discrimination training procedure consisting of instructions, discrimination training (where subjects identified correct and incorrect tutor behaviors), corrective feedback, and audio tape recordings for self-monitoring; this procedure resulted in the teachers' correct use of "behavior specific praise" with students. However, there was no transfer of training of the newly-learned skills beyond the specific target behaviors trained by the experimental procedures.

The present study also evaluates a program designed to teach behavior modification skills through videotape discrimination training; however, it is hoped to be less time-consuming and to produce more

transfer of training. This training program includes exposure to a set of rules for giving instructions, for fading physical prompts, and for presenting consequences in one-to-one therapy sessions with SMI pupils. The trainees view role-played tutoring sessions on videotape and score instances of correct and incorrect tutor behaviors. The training tape covers two sets of 10 trials, each trial depicting use of the specific rules for instructions, physical prompts, and consequences with 4 to 7 randomly assigned errors.

This study addresses the following research questions: (1) Will this training program result in tutor learning? (2) Will the discrimination training procedure result in generalization to tasks both similar to and dissimilar from those observed on the videotapes during training? This study is a replication of one previously conducted by McCarthy (Note 1).

METHOD

Subjects and Setting

Two full-time and two part-time paid staff served as trainees in this investigation. Their ages ranged from 18- to 25-years. None of the trainees had had formal training in behavior modification. In selecting the trainees, the experimenter used a pretest to assess their competency in those behavior modification skills described in the rules. (The percent compliance with the training program rules during the 15 minute sessions with their SMI pupils served as a measure of competence in behavior modification.) All trainees exhibited poor performance in one or more of the three skill areas during the pretest.

The experimenter assigned each of the four trainees to an SMI pupil for the duration of the study. All four pupils were assessed as severely mentally impaired (IQ 30 or below) using one or more standardized test instruments. Their ages ranged from 18- to 24-years. They were non-ambulatory, and each exhibited one or more stereotypic, self-stimulatory behaviors which competed with training tasks.

Observation of the trainees took place in a large open classroom, and videotape training took place in an observation room adjacent to the classroom.

Response Definitions

The target behaviors measured were the trainees' correct use of instructions, physical prompts, and consequences. Each of these behavior modification techniques was divided into several components

with specific criteria defining a correct occurrence of each component. For instructions, physical prompts, or consequences to be scored as correct for a trial, the criteria for all components in the category had to be met. Giving an instruction, delivering a physical prompt, and consequating the pupil's response comprised a single trial. The definition of each trainee behavior and the criteria are described below.

Instructions

An instruction was a short vocal statement that directed the pupil to perform a task. The criteria for the components of an instruction were:

1. The pupil must be oriented toward the task or trainee. The pupil must not be engaged in disruptive physical or vocal behavior.
2. The instruction should be clear and discriminable. There should be at least a one second pause with no tutor vocal behavior between getting the attention of the pupil and giving the instruction.
3. The instruction must exactly match the instruction stated in the pupil's behavioral objective.
4. The instruction should only be presented once per trial.

Physical Prompts

A physical prompt consisted of the tutor touching, guiding, grasping, or moving the pupil so that all or part of the desired response occurred. Different levels of physical prompts were classified as either full, partial, minimal, or, when not used,

as no prompt. Full prompts consisted of the tutor directing the entire desired pupil response; a minimal prompt was a brief touch or push that only gave an initial start to the pupil's response; and no prompt was no physical interaction between the tutor and the pupil. The criteria for the components of a physical prompt were:

1. The physical prompt, if used, must occur concurrently with, or immediately after (approximately one second), the end of the instruction.
2. The physical prompt must be at the correct level: full, partial, or minimal. Reduction of the level of assistance may occur after a single correct response, but reduction of the level must occur after 10 consecutive, correct, prompted responses. Reduction of the physical prompt level may not occur after an incorrect prompted response. An increase in the prompt level must occur after 3 consecutive incorrect responses. Reduction of increased prompt level may change only one level at a time.

Consequences

Either reinforcement (consumables, tactile stimuli, verbal praise), verbal punishers ("No, that's not right"), or time out (turning away from the pupil) were employed as consequences. The criteria for the correct delivery of consequences in a trial were:

1. Consequences should be delivered within 3 seconds after the response.
2. Consequences should be correct: Reinforcement should follow a correct response, and punishment should follow an incorrect response.

3. The consequences delivered within a single trial must be consistent (i.e., all consequences in each trial should be either reinforcing or punishing).

Observation and Reliability Procedures

All five of the observers met a 95% agreement criterion in monitoring the trainee behaviors in a videotape training session before they monitored in the actual setting. The experimenter trained the observers in the same manner as the trainees were trained. Calibration sessions for the observers were held once a week for the duration of the study (Johnston & Pennypacker, 1979).

An observer monitored all of the trainees' one-to-one training sessions daily. The observer typically initiated a tutoring session by asking the trainee to get prepared for a session. A posted schedule of the tutoring sessions was also provided. The observer scored the trainee's use of the rules as correct or incorrect for each component of each trial in a session. Tutorial sessions lasted 15 minutes and consisted of 11 to 15 trials.

Independent observers obtained reliability on 29 to 42% of all of the sessions for each trainee. The independent observer typically sat opposite the primary observer with the trainee and pupil between them. The experimenter calculated interobserver reliability for each component of trainee behavior in the following manner. An agreement occurred if both observers independently marked a "+" or a "-" on their scoring sheets, indicating that a given behavioral component had or had not occurred in a given trial. The percentage of agreement

for each component was obtained by using the following formula:

$$\frac{\text{Agreements}}{\text{Agreements} + \text{Disagreements}} \times 100.$$

Interobserver agreement in the written rules phase ranged from 93 to 96.8%; and 96 to 100% in the videotape training phase.

Experimental Design

A multiple baseline design was used across subjects (Baer, Wolf, & Risley, 1968). The trainees viewed the videotape training program in two groups. The second group did not begin videotape training until a day after the first group completed training.

Pretest

In this phase, the experimenter assessed the trainees' use of the behavior modification skills, which were to be trained, prior to contact with the written rules. The experimenter provided the SMI pupil's behavioral objective (i.e., "Touch your nose"), a definition of correct pupil response, and a brief demonstration of the training procedure for each trainee. The demonstration consisted of identifying appropriate reinforcers, punishers, and task materials used, and modeling of a typical trial. Observers monitored the trainees' tutoring sessions; however, the trainees received no feedback on their use of behavior modification skills in this phase.

Written Rules

During this phase, the experimenter gave the trainees the written rules and definitions and required them to pass a quiz over these

materials at 90% accuracy. The quiz asked the trainees to list all components of the rules and give an example of each component. The trainees had to remediate errors until they met the performance standard on the quiz before they could participate in videotape training. Observers monitored the trainees in their tutoring sessions with the SMI pupils. The trainees also received no feedback on their use of the behavior modification skills in this phase.

Videotape Discrimination Training

In the discrimination training program, the trainees observed the videotape and attempted to identify and score correct and incorrect occurrences of the target behaviors (giving instructions, physical prompts, and consequences) and correct and incorrect pupil responses. Training sessions lasted from 45 to 60 minutes each, for 3 sessions. The trainees viewed different sequences (10 to 15 trials each) of the videotape during each training session. The experimenter used a standardized step-by-step procedure during videotape training sessions. The videotape used role-players for both pupil and tutor. The script specified for every trial the various correct and incorrect instances of each component of each target behavior. Over a set of 10 trials, each component (instructions, physical prompts, and consequences) had from 4 to 7 randomly assigned errors with a mean of 5 errors in each component. A typical videotape training trial might have included one error in the instructions component, no errors in the physical prompt component, and two errors in the consequence component. An example of an error that might have occurred in the instructions component is a

failure to present the instruction only once; instead, the tutor on the videotape might present the instruction twice.

Three of the four trainee and pupil pairs worked with tasks that were the same in topography as those viewed on the videotape: Nose touching or hand clapping. The remaining trainee worked on a different task: Waving.

The experimenter assigned the trainees to one of two training groups, and each group had two members. When training began, the experimenter showed three to five trials to familiarize the trainees with the pacing and format of the videotapes. Next, he gave a definition of the correct pupil response for each task presented on the videotape just prior to the start of videotape training. Then, the experimenter gave the scoring sheet to the trainees and explained its use to them. Figure 1 shows the scoring sheet. The trainees viewed and scored approximately 10 trials in each training session. They scored the videotaped tutor and pupil behavior by circling either "+" (correct), "-" (incorrect), or "NA" (not applicable) on the data sheets after the trial on the videotape ended. After each trial, the trainees alternated reading the component headings listed on the data sheet and announcing their scores. The experimenter replied by saying either "yes" or "no" after each score had been read and gave a brief explanation of the correct scoring when an error occurred. Typically, the explanation was a restatement of the rule for the component missed by the trainee. Occasionally, after the explanation by the experimenter, the trainees viewed again the videotaped trial in which the error had been made.

Figure 1

Observer: _____	Instructional Objective: _____	Student: _____
Time: _____		Tutor: _____
Date: _____		

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
INSTRUCTIONS																															
Prior 1+ sec. pause?	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Student attending?	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Match instr. obj.?	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Once only?	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
PHYSICAL PROMPTS																															
With/after instr. obj?	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
What prompt level?	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
At correct level?	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
correct R?	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
CONSEQUENCES																															
Correct Consequence all v/in 3 sec?	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Consistent?	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	
Correct Consequence	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	

The trainees had the opportunity to practice the behavior modification skills in one or two therapy sessions after each training session; however, in this phase, they received no feedback concerning their performance in the therapy sessions. During each training session, the experimenter instructed the trainees to use what they had learned in videotape training during their tutoring sessions with their pupils.

RESULTS

Figure 2 shows the trainees' performance in each of the three major components. Each data point represents the percent of trials in a session in which a trainee correctly used the rules in one of the three major components. For example, if a single rule in the instructions component was used incorrectly, that trial would be scored as incorrect.

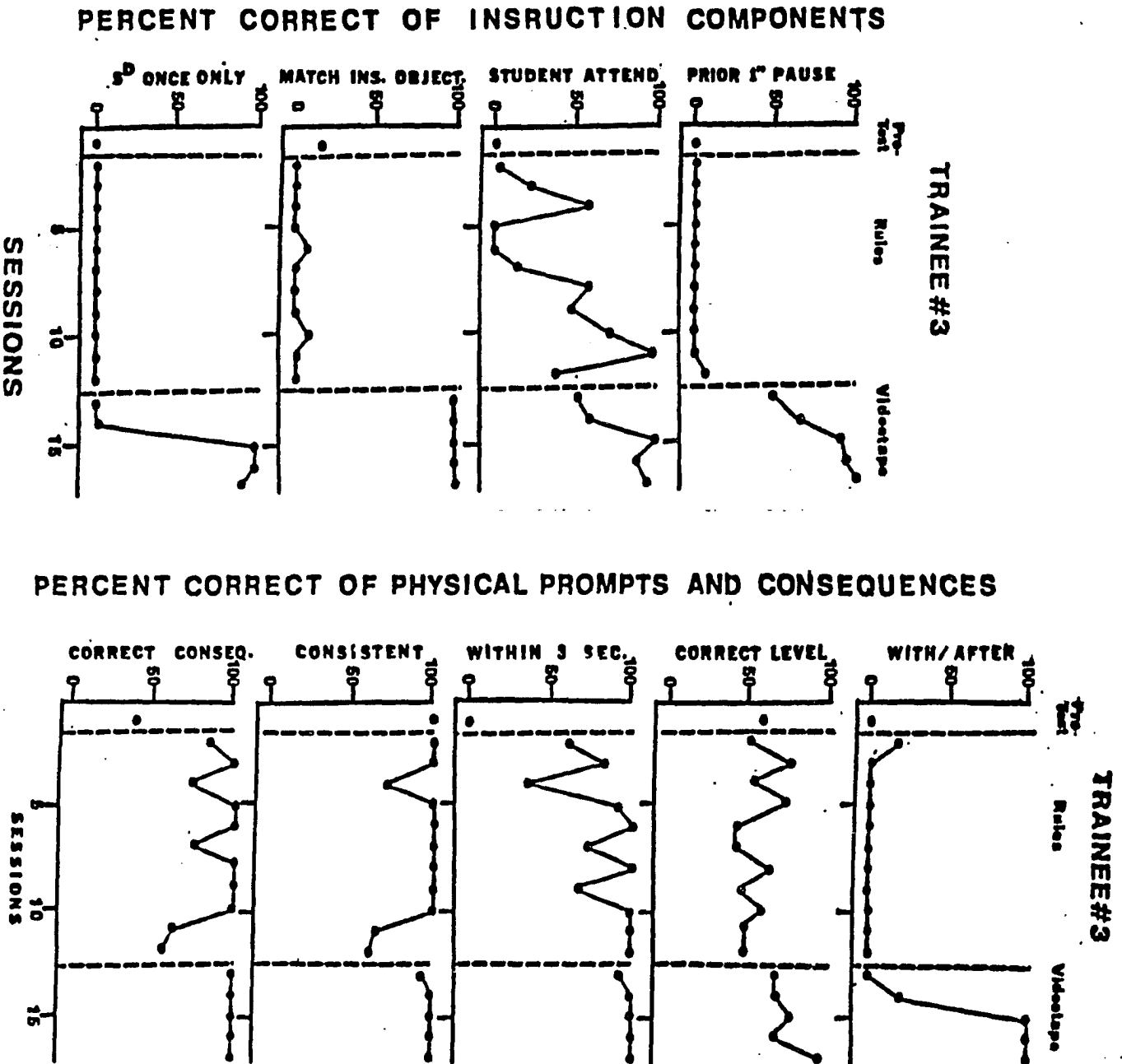
Pretest scores on instructions and physical prompts were low for all trainees (range 0 to 5%). For the consequences, Trainees 1 and 4 showed higher pretest scores (40 to 85%).

The written rules had little effect on the use of instructions and physical prompts, with the exception of Trainee 1 for instructions and Trainee 2 for physical prompts. However, performance improved markedly in the use of consequences for Trainees 1, 2, and 3, while Trainee 4 was already nearly perfect.

Again, with the introduction of the videotape training, performance improved for nearly all trainees across nearly all behaviors; exceptions were for instructions for Trainee 2, who remained at a low level, and for consequences for Trainees 1 and 4, who were already perfect or nearly so.

Figure 3 shows a fine-grain analysis of the data for Trainee 3 in terms of the correct use of each of the specific rules which make up the three major components. Table 1 shows the mean percent correct use of each of the specific rules across all experimental phases for all of the trainees. In all cases, videotape training increased the trainees percent correct use of the specific rules.

Figure 3



The correct use of the behavior modification skills for Trainee 1 transferred to tasks similar to, but not presented, on the videotape. Trainee 1 taught her SMI pupil a task ("Wave") which differed from tasks that the trainees had seen demonstrated on the videotape ("Touch your nose" and "Clap your hands"), yet her performance was similar to that of the trainees who taught the tasks depicted on the videotape, as may be seen in Figure 2.

TABLE 1

Mean Percent of Correct Use of Each of the Specific Rules
Across all Experimental Phases for all Trainees.

		Pretest	Rules	Videotape
Instructions	Prior 1" Pause	10.71	16.07	75.86
	Student Attend	19.71	54.03	84.69
	Match Inst Obj	54.71	69.63	100.00
	Once Only	45.00	78.74	91.00
Physical Prompts	With/After Inst	11.42	49.26	68.91
	Correct Level	50.14	67.00	79.56
Consequences	Within 3"	38.28	90.01	97.65
	Consistent	89.28	95.34	98.60
	Correct Conseq	70.85	93.46	98.13

DISCUSSION

The present research demonstrated that videotape training can effectively teach behavior modification skills in only three hours and that those skills can transfer to behavior modification projects not covered in the training program. This is an improvement on the work of Koegel et al. (1978) who required up to 25 hours for the program and on the work of Horton (1975) who was unable to obtain transfer from the problems used in his program to novel problems. The crucial difference between the current program and that of Koegel et al. might be that this program required the trainees to actively discriminate between instances of proper and improper behavior modification procedures illustrated on the videotape, whereas the slower program did not, possibly accounting for the apparently more rapid learning in the present case. And the crucial difference between this program and Horton's could be that Horton may not have instructed his trainees to actually use the skills they had learned when working on novel problems, whereas the experimenter gave those instructions in the present study; this might account for the presence of transfer of training in the present study and not in Horton's.

Further research is needed to examine the specific components of this program. The presentation of the rules did not generate high performance in all components for any one trainee, although the rules were effective in improving the use of consequences in some cases. A case might be made that the rules lack sufficient

detail to control reliably appropriate trainee performance. But trainee performance improved during videotape training; thus, it may be that the videotape discrimination training added the detail to the rules that was necessary for the rules to exert proper control. The trainees were able to come under the detailed control of these rules because they actively participated by scoring, according to the rules, correct and incorrect instances of tutor and pupil behaviors on the videotape. The trainees' active participation was maintained by the experimenter's attention to and feedback for their scoring. So, both scoring correct and incorrect behaviors and the experimenter's attention and feedback may have contributed to the videotape's effectiveness. Further research would be necessary to isolate the separate effects of the trainees' active participation and the experimenter's feedback.

Further research investigating variations in the order of presentation or the addition and/or deletion of certain training components may help us to understand how to construct a more effective and efficient program. Another issue warranting further research is the maintenance of the use of therapy skills acquired through videotape training. In addition, it would be desirable to replicate the transfer of training demonstrated with the single trainee who worked with a novel task in the present experiment.

This videotape program was a rapid and effective method for training basic behavior modification skills used to teach SMI pupils. In this study, trainees spent three hours in videotape training with opportunities for practice between each training session. Typically,

staff training involves frequent monitoring, lectures, and on-the-job corrective feedback. The present study demonstrated an effective method which eliminates the large investment in staff training time. It is reasonable to assume that this method could also be used to train other types of skills which can be operationalized into discrete units, such as assembly line tasks and social skills training.

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FIGURE CAPTIONS

Figure 1. Score sheet used by the trainees during videotape training and by the observers and reliability observers while observing the trainees.

Figure 2. Trainees correct use of behavior modification skills analyzed in terms of the three major components: instructions, physical prompts, and consequences.

Figure 3. Trainee 3's correct use of the nine specific rules which make up the three major components (instructions, physical prompts, and consequences). S^D once only: The instruction must be given once only. Match Ins. Object: The instruction must match the instructional objective exactly. Student Attend: The student must be attending. Prior 1" Pause: There must be a 1 second pause between getting the student's attention and giving the instruction. With/After: The physical prompt must be delivered with or immediately after the instruction. Correct Level: The physical prompt must be at the correct level. Within 3 Sec.: The consequences must be delivered within 3 seconds after the student's response. Consistent: The consequences must be consistent. Correct Conseq.: Consequences must be correct.