The Effect of Active-Participation with Feedback in a Videotape, Discrimination-Training Program

Stephen M. Brewer
Western Michigan University

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THE EFFECT OF ACTIVE-PARTICIPATION WITH FEEDBACK IN
A VIDEOTAPE, DISCRIMINATION-TRAINING PROGRAM

by

Stephen M. Brewer

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THE EFFECT OF ACTIVE-PARTICIPATION WITH FEEDBACK IN A VIDEOTAPE, DISCRIMINATION-TRAINING PROGRAM

Stephen M. Brewer, M.A.
Western Michigan University, 1981

With the use of a multiple-baseline design, the present experiment examined the effect of three training conditions on the acquisition of tutoring techniques in four volunteer college students. The three training conditions were: (1) Guidelines, subjects read and were tested over a manuscript; (2) Passive-Participation Without Feedback, subjects viewed 15 vignettes of a model’s correct and incorrect use of tutoring techniques without receiving feedback on the model’s behavior; and (3) Active-Participation With Feedback, subjects actively scored and received feedback on the same videotaped model’s use of tutoring techniques. Subjects participated in one of the training conditions once at the beginning of each condition and had access to the guidelines for 5 minutes prior to each role play assessment period. During the Active-Participation With Feedback Condition, mean scores improved over baseline for all subjects; whereas, no improvement was observed during the Passive-Participation Without Feedback Condition. While the present research strongly suggests that subjects actively participate and receive feedback on their scoring of a model, further research will be required to separate the possible differential effects of scoring a model versus receiving feedback on the model’s behavior.
ACKNOWLEDGEMENTS

A project such as this could not have been completed without the help of many people. The author wishes to thank Judy Osborne, Paul Dawson, Marc Luoma, Tracy Newby, and Debbie Miller for their participation as role players and observers. By the end of this project, all showed signs of becoming 'video-happy', a term roughly equivalent to videotape saturation. Special thanks to Ted Apking, who developed the tape used during this project and whose comments greatly improved the content of this manuscript. Special thanks to Wally Yerty and the staff at the ERC Audio-Visual Department who provided equipment and technical expertise. Dr. Paul T. Mountjoy and Dr. John Nangle provided comments on an earlier draft of this manuscript as well as assisted in the development of this project. Dr. Richard W. Malott deserves a special commendation for guiding me through my tenure at Western Michigan. His insights on rule governed behavior proved to be an excellent vantage point from which to examine the results of this study. Thanks to Sue Dickerman, who prepared this manuscript for submission. Of course, thanks to State Farm Insurance Company for saving the author from becoming further in debt to others. Thanks to Ann Marie Pula and the gang who put up with me during this project and watched me become a manic-depressive in 10 short, fun-filled months. A final thanks to my father who kindly pushed me toward Western Michigan and financed this whole experience.
Requests for reprints should be sent to Dr. R. W. Malott, Department of Psychology, Western Michigan University, Kalamazoo, Michigan, 49008.

Stephen M. Brewer
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CHAPTER I

Introduction

Videotape techniques in training behavior modification skills have been used with such diverse populations as volunteer teachers (Horton, 1975; Koegel, Russo & Rincover, 1977), parents of autistic children (Koegel, Glahn & Nieminen, 1978), paraprofessionals (McCarthy, 1978; Schultz, 1980), and high school students (Gladstone & Sherman, 1975).

Gladstone and Sherman (1975) trained seven high school students to conduct training sessions with profoundly retarded children. The training program featured videotaped modeling, role play rehearsal, and corrective feedback in a multiple-baseline design over 15 sessions. The authors found consistent improvement in the subjects' application of contingent reinforcement and verbal instructions while seeing no improvement in the subjects' use of physical prompts. An important feature of their work was the experimenter's use of corrective feedback statements to subjects on their use of behavior modification techniques. While the experimenters demonstrated that the subjects' successful use of behavior modification skills transferred to other target behaviors following training, aspects which contributed to the training effect were not isolated.

Horton (1975) developed a videotaped training procedure designed to increase use by two teachers of general approval statements with elementary school students. The three-segmented training program
included: (1) reading a prepared statement which defined all target behaviors, (2) viewing a videotape discrimination-training program, and scoring correct and incorrect instances of the target behavior, and (3) listening to an audiotape recording while scoring correct instances of the target behavior. In a second experiment, the researcher replaced the audiotape component (listening to an audiotape and scoring performance) with corrective feedback given to the subjects on their rate of general approval statements in the classroom. While finding improvement in the rate of using general approval statements following each intervention, Horton noted the most significant increase in the rate of general approval statements occurred following the delivery of feedback statements to the subjects on their rate of such statements. An interesting issue left unexplored by Horton was the effect on rate of general approval statements in subjects who actively scored a videotape model's use of general approval statements and received feedback on their scoring.

Koegel, Russo and Rincover (1977) assessed and trained 11 teachers in the use of generalized behavior modification skills with autistic children using a multi-response baseline design. The training program featured reading a manual on correct and incorrect use of behavior modification procedures, viewing a videotape showing correct and incorrect usage of these procedures, participating in practice in the actual setting, and receiving feedback on performance with modeling of correct usage. Trainees showed considerable improvement in the correct use of behavior modification procedures after the training program. The authors noted that the trainees' use of behavior
modification skills transferred to other tasks following training. Koegel et al. (1977) failed to provide a component analysis which would have indicated which features of the training program contributed to the results. The feedback component in the training program was highly labor-intensive — an observer monitored all sessions and provided detailed corrective feedback every 15 minutes — yet its contribution to the training effect was not clearly documented.

Koegel, Clahn and Nieninen (1978) used a multi-response baseline design to evaluate the acquisition of one-to-one instructional skills in the parents of autistic children. When given access to a training manual which explained correct teaching procedures, their data indicated that parents failed to teach their autistic children effectively. The training program designed by Koegel et al. (1978) included a 30-minute lecture on the components of behavior modification, a videotape showing examples and nonexamples of correct teaching trials, and a five-trial demonstration of correct teaching procedures. Following viewing the videotape, parents' scores showed the largest gains in the correct presentation of the discriminative stimulus, the use of prompts, the use of shaping or 'successive approximations,' the correct application of consequences, and the use of discrete trial segments. Following two experiments, Koegel et al. (1978) found that the date of improvement in parents' use of behavior modification procedures corresponded with the date of viewing the concept on the training tape. The authors developed a labor-intensive training program which did not facilitate the transfer of correct teaching behaviors outside of the experimental setting. Potentially, their
failure to find generalization may have been due to a failure to pro-
vide specific feedback on the subjects' use of the subcomponents of a behavior modification trial.

Schultz (1980), in replicating McCarthy (1978), used a video-
tape training package to instruct college students in the use of behavior modification skills. The training package consisted of written materials (which included definitions of all of the components of a one-to-one instructional session), videotape discrimination-training, feedback or praise contingent upon accuracy in scoring the videotape training package, and practice in the actual setting. Schultz (1980) noted that, after training, all of the students improved their use of one-to-one instructional techniques over baseline, with the greatest level of improvement occurring when the experimenter provided contingent feedback on the students' accuracy in scoring the videotape. Schultz advocated further research in order to isolate the effects of having trainees actively score correct and incorrect instances on the videotape.

Earlier researchers (Koegel et al., 1977; Koegel et al., 1978) delayed the delivery of feedback statements to trainees until participation in rehearsal sessions. Later researchers (McCarthy, 1978; Schultz, 1980) provided immediate feedback to trainees on their accuracy in scoring a videotaped model's performance in an instructional session and demonstrated a more powerful experimental effect than their earlier colleagues. One may speculate from this information that the timing of the delivery of feedback statements to trainees may be a crucial feature in order to establish discriminative
discriminative control over the concepts taught on the training tape.

Horton (1975) had subjects score instances and noninstances of correct therapy trials while viewing a model instructor during an instructional session. Similarly, McCarthy (1978) and Schultz (1980) required subjects to actively participate while viewing a videotape training program by scoring a model's use of instructional techniques in an instructional session.

Although researchers have included corrective feedback and active participation through scoring a model's use of instructional techniques in their training program, to date there has been no attempt to determine whether these features contribute to the acquisition of behavior modification skills. Through the use of a previously designed videotape training package (Apking, Note 1), the proposed research will address the following question: Does actively scoring and receiving feedback on a model's use of the techniques of one-to-one instruction contribute to the acquisition of one-to-one instruction skills during role plays?
CHAPTER II

Methodology

Subjects

In order to obtain subjects for the study, the experimenter recruited four volunteer college students from freshman level psychology courses taught at Western Michigan University. The experimenter used two factors in selecting subjects: (1) subjects could not have had prior exposure to any discrimination-training program designed to teach behavior modification skills; (2) subjects would have to be available during a one-hour time period five days per week. For attending 95% of all sessions and scoring 100% correct on a quiz over the guidelines for one-to-one instruction, Subjects 1, 2 and 4 received 'bonus points' applicable to their final course grade and a letter indicating successful completion of a training program for working with low-performing pupils. Subject 3 received a letter indicating successful completion of a training program for working with low-performing pupils by meeting the same criteria.

Assistants

Six volunteer psychology students assisted in the implementation of the experiment. Assistants received either a letter indicating participation either as a trainer in a training program or college credit for role playing or conducting data analysis. Five of the six assistants had completed at least four psychology courses. One of
the assistants was taking her first course in psychology.

Setting and Materials

Data collection sessions were held in a classroom equipped with a table, two chairs, blackboard, television monitor, videocameras, and a videorecorder. Other materials used during data collection sessions included a small 2.5" x 2.5" wooden block, 10, 8.5" x 11" cards used for indicating trial number, a 13-page handout on correct implementation of a one-to-one instructional session, and role player scripts (the latter two will be described in detail below).

Training sessions were held in a classroom equipped with a desk, television monitor, and videotape playback equipment. Materials used during training sessions are listed below.

Prerecorded videotape. Apking (Note 1) developed a videotape training program to teach one-to-one instructional skills to be used with low-performing pupils. The one-to-one instruction training program consisted of a 2-minute introduction followed by 15 training trials. Each training trial included one simulated instructional trial, 45 seconds of silence with no picture on the television monitor, followed by a graphic display which indicated whether the model correctly or incorrectly used the techniques of one-to-one instruction during that trial.

Guidelines for one-to-one instruction. The experimenter distributed to all subjects a 13-page handout which defined the four components of one-to-one instruction ('guidelines'). For this research, the four components were: (1) Pretask Component; (2) Task Component;
(3) Posttask Component; and (4) Correction Loops. A copy of the guidelines which includes all subcomponent definitions is included in Appendix A.

Videotape training scoring sheets. A copy of the scoring sheets used by subjects when viewing the videotape training program during the Active-Participation with Feedback Condition appears in Appendix B. Each score sheet contained space to score four trials on the videotape. During each trial, the subject used the scoring sheets to record tutors' use of the subcomponents of one-to-one instruction (as specified in the guidelines). The subject wrote either a '+' (correct) or '-' (incorrect) next to each corresponding subcomponent of the one-to-one instructional model during each trial on the videotape.

Role player scripts. During role play assessment sessions, the experimenter used trained role players as pupils in order to assure that subjects would be exposed to all possible combinations of pupil errors. With the use of a script not visible to the subjects, the experimenter predetermined role player behavior for each trial. By using a table of random numbers, the experimenter arranged pupil errors in a random fashion. During a given trial, the role player script would specify whether the role player should attend before the delivery of each instruction and whether to respond correctly, incorrectly, or in a non-target fashion.

Procedure

Subjects entered each of the following training conditions in a
staggered schedule, typical of a multiple-baseline design (Baer, Wolf & Risley, 1968). Subjects participated in a given training program once at the beginning of each condition.

Guidelines condition. During the introductory session, the experimenter gave all subjects a copy of the guidelines. The experimenter allowed the subjects 72 hours to read the guidelines and to be able to write out all subcomponent definitions. During the second session, the experimenter held a 15-minute question and answer period with all subjects prior to distributing a 21-item test consisting of short essay and fill-in-the-blank questions. The experimenter allowed the subjects as much time as necessary to finish the test. Following its completion, a grader critiqued the test in the presence of the subject pointing out all errors and citing the correct response. During the grading period, the grader was not permitted to give examples of concepts covered on the test. The grader gave the subjects the opportunity to review the guidelines before remediating the test. This procedure was repeated until all subjects correctly answered all questions on the test. Three of the four subjects met criterion without remediation. Subject 2 required two remediations in order to meet criterion.

Passive-participation without feedback. The experimenter verbally instructed the subjects in the Passive-Participation Without Feedback Condition to view the videotape training program and to attend to features of the model's behavior which they saw as effective and to features which they ineffective. During this condition, the experimenter did not explicitly refer to the guidelines. Subjects during the Passive-Participation Without Feedback Condition were not
required to score whether the model correctly or incorrectly used the techniques of one-to-one instruction. The experimenter eliminated the graphic display following the 45-second pause by adjusting the contrast control of the television monitor. While subjects viewed the videotape, the experimenter monitored to ensure that all subjects were watching each trial. Throughout this experimental condition, subjects attended to the training tape without prompting from the experimenter. Typically, subjects completed this portion of the training program in 50 minutes.

**Active-participation with feedback.** Subjects in this condition received a 10-minute explanation on how to use the scoring sheets to evaluate a model's correct and incorrect use of the techniques of one-to-one instruction. During this instructional period, the experimenter responded to the subjects' questions on how to mark the scoring sheets and reminded them to score the subcomponents of each trial as either 'correct' or 'incorrect' according to the guidelines.

Subjects viewed each trial on the videotape and scored whether the model correctly or incorrectly used the techniques of one-to-one instruction during the 45-second pause. Following the 45-second pause, they compared their scoring sheets to the display.

During the Passive-Participation Without Feedback Condition and the Active-Participation With Feedback Condition, subjects viewed the training program once at the beginning of each condition. In order for subjects to advance to the next condition of the experiment, the experimenter required data to stabilize (Johnston & Pennypacker, 1981).
Assessment. The experimenter evaluated the subjects' use of the techniques of one-to-one instruction from videotapes of the subjects role playing a one-to-one instructional session. Each videotaped role play session consisted of 10 trials. Subjects participating in role play assessment sat facing the role player at a table in a classroom equipped with videotape recording equipment. Subjects participated in role play assessment sessions 15 minutes a day, 5 days per week.

Before each assessment session, subjects received instructions. The experimenter read the response definitions for each of the instructional tasks used during assessment sessions and asked if the subject had any questions concerning them. At no time during the experiment did the subjects ask any questions concerning the assigned instructional tasks. Throughout the experiment, the experimenter used the following two instructional tasks: (1) 'Arms up.' Criterion for a correct response was considered any instance within 3 seconds of the instruction in which the pupil (role player) extended both hands over his or her head. One hand extended above the pupil's head should be scored as incorrect as should both hands extended, but not extended over the pupil's head. (2) 'Pick up the block.' Criterion for a correct response would be considered any instance within 3 seconds of the instruction in which the pupil lifts the block off the table. For the response to be scored as correct, at no time should any portion of the block remain on the table.

Prior to each role play assessment session, subjects read the guidelines for 5 minutes. Before each role play assessment session,
the experimenter gave all the subjects the following instructions:
"At the end of each trial, (subject's name) needs to say 'Stop.'
After each trial, (role player's name) needs to advance the counter."
During all role play assessment sessions, the experimenter withheld
feedback from both the role player and the subject as to the subject's
correct and incorrect use of the techniques of one-to-one instruction.

Observation. Following role play assessment sessions, an ob­
server scored the subjects' correct and incorrect use of the techniques
of one-to-one instruction. Observers sat in a classroom equipped with
videotape playback equipment and a television monitor and scored the
subjects' correct and incorrect use of the techniques of one-to-one
instruction using the guidelines for all response definitions. Ob­
servers used the same scoring sheets used by subjects in the Active-
Participation With Feedback Condition when assessing each role play
session. During data analysis sessions, observers wrote 'void' next
to the corresponding sections where the subject's behavior could not
be accurately analyzed due to equipment error or in instances when the
role player failed to follow all components of the role player script.

During 49% of all observational sessions, a second observer in­
dependently scored the videotape in order to obtain observer agree­
ment data. An agreement was defined as any occasion when both ob­
servers indicated that a behavior did or did not occur during a trial.
The experimenter scored a disagreement when one observer scored the
occurrence of a given behavior during a trial and the other observer
did not. Observer agreement was computed by dividing agreements be­
tween observers by agreements plus disagreements between observers

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and multiplied by 100. Any instance when an observer wrote 'void' on the scoring sheet resulted in the corresponding section for both observers being deleted from data analysis. The average percentage of observer agreement across the entire experiment was 99.3%. Percentage agreements scores ranged from 93.9 - 100%. On 32 of the 44 sessions where the experimenter collected observer agreement data, there was 100% agreement between the two observers.

During 47% of all sessions, an observer scored the videotape in order to determine the role player's compliance with a script. Observers used a 13-item checklist to obtain data on role players' compliance in following a script. During a given trial, observers would score whether the role player gave verbal feedback to the subject on his/her use of the techniques of one-to-one instruction as well as 12 other items. A copy of the complete checklist appears in Appendix D. Role players' percent compliance in following a script was calculated by dividing all instances when the role player correctly followed the script by all instances of correct plus incorrect role player behavior and multiplied by 100. All categories marked "NA" (not applicable) due to technical problems were excluded from data analysis. Data on role players' compliance in following a script across the entire experiment indicated that role players achieved 100% compliance on 26 of 42 sessions.

A second observer participated during 62% of all sessions where observers collected data on the role players' compliance in following a script. The experimenter obtained an observer agreement percentage on role players' compliance in following a script by dividing
agreements plus disagreements between observers and multiplying by 100. Any instance when an observer wrote "NA" on the scoring sheet resulted in the corresponding section for both observers being excluded from data analysis. Agreement on role players' compliance in following a script indicated 98.15% agreement between two observers over 17 of 29 sessions where data was collected.

**Observer training and calibration.** Forty-eight hours prior to the first training session, the experimenter distributed a copy of the guidelines to all observers. Prior to exposure to the videotape training program, the experimenter required all observers to score 100% on a test over the content of the guidelines.

During videotape discrimination-training, observers viewed the same videotape training program used during the experiment and scored as either 'correct' or 'incorrect' a model's use of the techniques of one-to-one instruction. As during training for the subjects, the guidelines were used as a reference for all subcomponent definitions. The experimenter required observers to obtain 90% accuracy in scoring the videotape, discrimination-training program before they were permitted to score the subjects' videotaped role plays.

In order to account for 'observer drift' (Kazdin, 1977), the experimenter required observers to attend weekly calibration sessions. During calibration sessions, observers scored a series of 10 videotaped trials of an instructional session ('test trials'). The experimenter required observers to obtain 90% accuracy in scoring the test trials in order to be able to continue to score the subjects' videotaped role plays. Prior to scoring the test trials, the
experimenter frequently discussed response definitions with all observers. Typically, calibration sessions lasted 1 hour per week. At no time during the experiment did any of the observers fail to meet the 90% criterion.
CHAPTER III

Results and Discussion

While passive-participation without feedback failed to show a clear effect over guidelines, active-participation with feedback resulted in substantial improvement over previous conditions (see Figure 1). All subjects in the Active-Participation With Feedback Condition obtained at least 75% correct usage of the techniques of one-to-one instruction in six assessment sessions (see Table I).

When including active-participation with feedback, the 1-hour videotape, discrimination-training program appears to be an effective method for training correct usage of tutoring techniques (also documented by Schultz, 1980). The critical difference between the training programs outlined by Koegel et al. (1977), Koegel et al. (1978), and the current program may have been that this program required subjects to actively participate by scoring a model's correct and incorrect usage of the techniques of one-to-one instruction as well as viewing a display which showed the correct scoring of that trial, while the slower programs did not. Having subjects actively participate by scoring and receiving feedback may account for the rapid acquisition in the present case.

The current program replicates the findings of Schultz (1980) by demonstrating that videotape can be effective in training correct usage of tutoring techniques. This program differed from the 3-hour training program outlined by Schultz by reducing the number of viewings
Figure 1. Mean percent correct use of instructional techniques as a function of exposure to three training conditions.
FIGURE I

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Table I. Mean percent correct use of instructional techniques as a function of exposure to three training conditions.
### TABLE I

Mean Percent Correct Use of Instructional Techniques as a Function of Exposure to Three Training Conditions

<table>
<thead>
<tr>
<th>Subject</th>
<th>Guidelines</th>
<th>Passive</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>19.40%</td>
<td>22.00%</td>
<td>62.91%</td>
</tr>
<tr>
<td>2</td>
<td>20.50%</td>
<td>25.32%</td>
<td>83.14%</td>
</tr>
<tr>
<td>3</td>
<td>40.73%</td>
<td>26.18%</td>
<td>79.13%</td>
</tr>
<tr>
<td>4</td>
<td>37.73%</td>
<td>40.91%</td>
<td>78.26%</td>
</tr>
</tbody>
</table>

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of the videotape training program from three to one by eliminating the group discussion period following scoring of each trial.

Scoring each trial of the videotape appears to ensure that subjects attend to the critical aspects of the model's behavior during a given trial. The display following each vignette in the videotape potentially served two functions. First, the display served as a feedback mechanism during discrimination-training. Also, the display likely served as a reward for subjects who had identical responses on their scoring sheets. The display would also identify errors made by the subject during scoring. Such corrective feedback may have a mildly aversive consequence, reducing the likelihood of similar errors occurring in the future. Second, the display repeated guideline rules which subjects were no longer able to recite. Continued repetition of rule statements during the videotape, discrimination-training program may have led to subjects being able to covertly repeat guideline rules.

As in Schultz (1980), in the present case, subjects' tutoring skills improved over time only during the Active-Participation With Feedback Condition. In reference to the utility of this effect, Koegel et al. (1978) indicated that an effective videotape, discrimination-training program should include practice over time of the techniques viewed on the videotape. Subjects' skills improving over time might be explained by examining the effect of self-given consequence on behavior (Malott, Tillema & Glenn, 1978). In the present case, the subjects in the Active-Participation With Feedback Condition may have covertly repeated rule statements from the display.
as corrective feedback on their own behavior during role play assessment sessions. Subjects who covertly said during assessment sessions, "After an incorrect response, I should look away for 2 seconds" would be either self-reinforcing or punishing their own behavior. Such covert statements might have either a reinforcing outcome ("Great! I remembered to look away after an incorrect response."), or a mildly aversive outcome ("I forgot to look away. Next time I'd better pause for 2 seconds.").

In contrast, during the Passive-Participation Without Feedback Condition, subjects did not view the visual display following each vignette on the videotape. Since the videotape training program included correct and incorrect examples of one-to-one instructional techniques, the lack of a display showing correct rule statements during this condition may have led subjects to develop incorrect rule statements (Malott et al., 1978; Malott, Note 2). By repeating rule statements which failed to include all features of the subcomponent definition, subjects would repeat previous mistakes due to their self-given corrective feedback statements being incomplete.

Data in the present case conflict with the data from two previous studies (Koegel et al., 1977; Koegel et al., 1978) which showed that percentages increased during conditions which included passive-participation without feedback. Subjects' tutoring skill improvement during conditions which resemble passive-participation without feedback may be explained by the effect of other variables present during the training program. These variables included having the subjects participating in practice sessions and receiving corrective feedback.
by trainers on their use of instructional techniques (Koegel et al., 1977) and having access to a manual paraphrasing the script of each videotaped training tape (Koegel et al., 1978).

Covert statements may also explain the subjects' poor usage of the techniques of one-to-one instruction during the Guidelines Condition. The subjects in the Guidelines Condition may have made covert statements based on two outcomes. First, if subjects found the assessment period mildly aversive (there is indirect verification of this), tutor behaviors which led to a quick termination of a trial may reinforce incorrect rule statements such as, "When I prompt a response and the role player does it correctly, I should reward the behavior and stop the trial." Following such a rule statement would lead subjects to avoid repeating the Pretask, Task, and Posttask Components following the Correction Loop for Non-Target Responses. Second, if a role player emitted a desired response, the subject's prior behavior would be reinforced. Since correct role player responses were not contingent upon subjects' behavior, any response by the subject -- regardless of whether it was correct or incorrect -- may have been reinforced. Skinner (1969) labeled this phenomenon as 'superstitious conditioning'. A subject who held the role player's chin to assure an attention response, will likely make an incorrect rule statement such as "By holding on to the role player's chin during the delivery of the instruction, I can be sure that he is attending." A subject who held on to the chin of the role player during the delivery of the instruction would fail to meet the requirement of a 1-second pause with no overt behavior directed toward the role player prior to the
delivery of the instruction.

Since the purpose of this experiment was to examine effective methods for using videotape in the acquisition of new behaviors, no follow-up data are included in this manuscript. This decision was based on the assumption that training for acquisition is influenced by contingencies during the training program, whereas, maintenance of behavior results from the contingencies in the natural environment. In obtaining long-term, durable results, previous researchers have relied on implementing procedures in the natural environment including intermittent reinforcement (Cossairt, Hall & Hopkins, 1973), peer contingencies (Martin, 1972), and self-monitoring (Herbert & Baer, 1972).

Active-participation with feedback was far more effective than passive-participation without feedback. Other data (Schultz, 1980) also indicate that active-participation with feedback is a quick method for training new skills in paraprofessionals. It would appear that activities during passive-participation without feedback are quite similar to those associated with the use of movies and lectures as a format for teaching. The present study found that passive-participation without feedback does not lead to rapid nor effective discrimination-training. Data from this experiment suggest that we alter movies and lectures to include components of active-participation with feedback when the goal is effective discrimination-training. When we include components of active-participation with feedback, we can expect the time for effective discrimination-training to be reduced.
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Note 1. Apking, T. (Producer). One-to-one instruction. Kalamazoo, Michigan, Western Michigan University Television Services, 1980. (Film)

Note 2. Malott, R. W. Rule governed behavior and the achievement of evasive goals: A theoretical analysis. Unpublished manuscript, 1980. (Available from Dr. R. W. Malott, Department of Psychology, Western Michigan University, Kalamazoo, Michigan, 49008.)

APPENDIX A

Guidelines for One-To-One Instruction*
(Direct Instruction Model)

**Attention Signal**

In order to teach a pupil, the tutor must have the pupil looking toward him or her; otherwise, the pupil might miss the instructions presented by the tutor. An attention signal is any overt response or set of responses made by the tutor which gets the pupil's attention. An attention signal should be used whenever the pupil is not attending to the tutor.

In a session in which a tutor is trying to teach a pupil, Johnnie, to pick up a toy on command, Johnnie must be attending to the tutor in order to be able to respond to the instruction: "Pick up the toy." If Johnnie is looking around the room or under the desk, for example, the tutor must use an attention signal. The tutor might say, "Look at me," or "Pay attention," or the tutor might touch Johnnie's hand to get his attention. Now, if Johnnie were sitting quietly looking at the tutor, the tutor would not need to present an attention signal.

Here are the two guidelines for using an attention signal:

1. An attention signal is any overt response(s) made by the tutor which evokes an attention response (defined below).
2. An attention signal is used whenever the pupil is not attending to the tutor.

**NOTE:** If the pupil is attending, the attention signal is not

*See Reference Note 3.
required. Score the data sheet as if a correct attention signal had occurred.

Attention response

So that you will be able to recognize when a pupil is attending, guidelines for the attention response are very precise because it is important for the pupil to be behaving appropriately when the tutor presents the instruction. The pupil is emitting an attention response when he or she is looking at the tutor, or in the general direction of the tutor, and is sitting quietly when the instruction is given.

"Sitting quietly" is not quite technically correct; to be more precise, the pupil should not be engaging in behavior which is incompatible with the target response or engaging in self-stimulatory behavior.

Behaviors which cannot occur at the same time as the target response are incompatible with the target response. For example, if the target response is picking up the toy on command, then responses which involve using the hands to manipulate objects or parts of the body would be considered incompatible behaviors. Self-stimulation is usually a highly repetitive action; often it involves excessive manipulation of body parts or objects. Examples of self-stimulatory behaviors are repeated rocking, wringing hands together, or rubbing body parts.

Here are two guidelines for the attention response:

1. An attention response is occurring whenever the pupil makes eye contact with the tutor and/or when the pupil's head is oriented toward the tutor when the instruction is given.
2. An attention response is not occurring if the pupil is engaging in behavior which is incompatible with the target response or if the pupil is engaging in self-stimulatory behavior.

One-Second Pause

After the pupil emits the attention response, the tutor pauses briefly before giving the instruction. This one-second pause keeps the attention signal from interfering with the instruction. If the tutor is trying to get the pupil's attention by saying, "Look at me, look here", and the pupil then looks at the tutor, the tutor must pause for one second before saying, "Pick up the toy."

Here is the guideline for the one-second pause preceding the instruction:

1. The tutor should pause briefly, not emit any overt response directed at the pupil for a period of time not less than one second and not more than three seconds.

Task Component

Instruction. After the attention response and the one-second pause, the tutor presents the instruction. The instruction should cue the pupil to respond. In order for the tutor to have the best control over the pupil's responding, there are two guidelines that must be followed when presenting the instruction. The instruction must be the same every time, in other words, it must match the instructional objective exactly. This allows the tutor to establish the most effective
control over the pupil's response. Also, the tutor should present the instruction only once. Presenting the instruction only once ensures the best control over the correct response by the instruction. If the pupil responds after one instruction sometimes, and after two or more instructions at other times, it is difficult to tell whether the pupil has learned to respond to the instruction in those situations (i.e., situations in which the pupil does not respond after the first instruction but responds later, after a second or third instruction). It may be that the pupil just happened to respond, and the response was under the control of some other stimulus in the classroom.

Here are the two guidelines for the instruction:

1. An instruction matches the instructional objective exactly, word for word.
2. An instruction must be presented only once for each opportunity for the pupil to respond (once during each task component).

Pupil Responses

Correct response. If the pupil follows the tutor's instructions and performs the target response correctly, a correct response has occurred and should be scored. The correct response is the desired response, the response that the tutor is trying to get the pupil to make. So that the correct response is easily recognizable, two simple guidelines describe it.

The two guidelines for the correct response are:
1. A correct response is a response which occurs at the level of independence (prompt level) specified by the instructional objective.

2. A correct response must occur within 3 seconds of the instruction.

Non-target response. If the pupil does not make the correct response, he or she might be engaging in non-target responding. Non-target responses are responses toward other things (other people or objects) in the tutoring setting. These non-target responses occur when the target response should be occurring. A few examples of non-target responses that might occur instead of the target response are: looking under the table, sitting without motion, or staring into space.

Here are the two guidelines for non-target responses:

1. Non-target responses are not approximations of the target response. (An approximation of a target response is a response which is only part of the target response or a response which requires more prompting from the tutor than the instructional objective specifies.)

2. Non-target responses occur in the 3 seconds following the instruction in place of the target response or an approximation of the target response.

Incorrect response. At times the pupil will emit a response and not be engaging in non-target responding, but the response is not correct; score these approximations of the target response as incorrect responses. Incorrect responses include any response
which is something like the target response, either an approxima-
tion of the target response or in the same response class as the tar-
get response. An approximation of the target response is a response
which is only part of the target response or a response requiring
more prompting from the tutor than the description of the correct
response allows. Responses in the same response class are physically
(topographically) similar to one another. For example, picking up
a cup, a box, a chair, or a coin might all be considered to be in the
same response class of picking up objects. So, in general, incorrect
responses are "something like" the target response as described above.

Here are the guidelines for incorrect responses:

1. Incorrect responses are target responses not emitted at the
   prompt level specified in the behavioral objectives.
2. Incorrect responses may be approximations of the correct re-
   sponse or responses in the same response class which do not
   meet all of the requirements described in the instructional
   objective.
3. Only consider incorrect responses occurring in the three
   seconds following the instruction.

Posttask Component

Consequences. 1. Reward. Tutors should present rewards im-
mediately after every correct pupil response to make the pupil more
likely to emit the correct response in the future. Some people pre-
fer to call rewards "reinforcers". (Reinforcers are events or objects
which -- when presented immediately after a response -- make that
response more likely to occur in the future.) In order to make the reward most effective, all vocalizations which occur with the reward or as part of the reward should be pleasant and relevant to the correct response.

Here are a few guidelines for rewards:

1. A reward (positive reinforcer) must be presented after every correct response.
2. Rewards must be presented immediately (within 2 seconds) following the correct response.
3. All vocalizations occurring at the same time as or shortly after the reward should be positive and accurate.

Two-second delay. After each incorrect or non-target response, the tutor should ignore the pupil for a brief period of time to discourage future incorrect or non-target responses. It is very important that every incorrect or non-target response produces a period of time without reward for the pupil. During the time that the trial is being delayed because of incorrect or non-target responding, the tutor should not attend to the pupil in any manner.

Here are the guidelines for the 2-second delay:

1. Delays should follow all incorrect and non-target responses.
2. The tutor must not interact or have eye contact with the pupil during the delay period.
3. The delay must last at least 2 seconds and no more than 5 seconds.
Correction Loops

The pretask, task, and posttask components of a one-to-one tutoring session have been described so far. These components specify the steps for getting the pupil's attention response, presenting the instruction, and consequating the pupil's response. The correction loop sequences will describe the steps necessary to get a correct response from the pupil when the pupil's first response is incorrect or non-target. In some cases, modeling the response will be necessary; in other cases, prompting will be necessary.

Correction Loop for Non-target Responses

When the pupil's response is a non-target response, prompting is required because the instruction did not get the pupil to attempt the target response. The tutor must begin the correction loop following the 2-second delay and not more than 5 seconds after the onset of the delay. Here is the sequence of steps for the correction loop and the guidelines for the new step — the prompt:

Instruction. As was the procedure in the earlier part of the trial, the tutor must get the pupil's attention and present the instruction. This second instruction is just like the first one and follows the same guidelines stated previously. Remember to get the pupil's attention before presenting the instruction, although in many cases the pupil is already attending. Following the model, the tutor must present the instruction and reward the correct response.

Prompt. As the tutor presents the second instruction, he or she
prompts the target response. A prompt is a method of physically
guiding a correct response. For example, if the target response
is pointing to an object, then a tutor may take hold of the
pupil's hand and point to the object if the pupil fails to do
so without assistance. Prompts occur at different levels. In
the example above, the tutor may find that after several trials
in which the hand was held firmly, it becomes possible to hold
the hand loosely or merely tap the hand in order to get the cor-
rect response. These varying degrees of control are called
prompt levels.
Here are the guidelines for the prompt:
1. The tutor physically guides the pupil through a correct
response.
2. The prompt must be presented concurrently with, or immediately
(2 seconds) following, the $S^D$.

Reward. As is always the case, the tutor rewards the correct re-
sponse. In this case, the correct response was prompted by the
tutor. Follow the guidelines for rewards.

Following the correct response which was prompted and rewarded
by the tutor, the tutor should then repeat the sequence of pretask,
task, and posttask components again, ending with correct responses.
All trials must end with a correct response, so the tutor must get
the pupil's attention, again, and present the instruction. Follow-
ing the instruction, the trial continues until the correct response
occurs and it has been rewarded.
Correction Loop for Incorrect Responses

If the pupil emits an incorrect response, the tutor must model the correct response during the correction loop. There is no need to prompt the response because the instruction is getting the student to attempt at least an approximation of the target response. The tutor must begin the correction loop following the 2-second delay and not more than 5 seconds after the onset of the delay.

Here are the steps (in sequence) for the correction loop for incorrect responses and the guidelines for the new step -- the model.

Instruction. As was the procedure in the earlier part of the trial, the tutor must get the pupil's attention and present the instruction. The second instruction is just like the first one and follows the same guidelines stated previously. Remember to get the pupil's attention before presenting the instruction. Many times the pupil is attending, but be sure.

Model. Remember, in the correction loop the tutor takes a more active role in helping the student make a correct response. After an incorrect response, the tutor should demonstrate the correct response at the same time or immediately after giving the instruction. It is important for the tutor to perform the target response completely and correctly so the pupil can see an ideal model of the correct response.

Here are the guidelines for the model:
1. The tutor must perform the target response correctly.
2. The pupil must be attending during the presentation of the model and the instruction.
3. Instruction must be concurrent with, or immediately preceding, the model.
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<thead>
<tr>
<th>Test or Training Trial #</th>
<th>Test or Training Trial #</th>
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<tbody>
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**Correction Loop**

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**POSTTASK**

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**GROUP**

**DATE**
### Assessment Script Trial Number _____

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#### Correction Loop

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<table>
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<th>After sd</th>
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<tr>
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<td>Correct response</td>
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## APPENDIX D

**ROLE PLAYER COMPLIANCE DATA**


### Role Player Compliance Data

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<th>Role Player</th>
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| Observer 1 | Today's Date | Subject | ( ) |
|------------|--------------|---------|
| Observer 2 |               |         |

**Instructor: Do not compare your data with the other Observer's!**

### Verbal

1. Verbal response by role player does not result in tutor laughing.
2. Verbal response by role player does not include feedback to tutor on his/her performance.
3. Verbal response by role player does not inform tutor of next response (e.g., "model it for me").
4. Verbal response by role player consistent with earlier/current sessions.

| 2 | 2 | 3 | 4 | 5 |

### Nonverbal

1. Role player is within 1 foot of table at the start of the trial.
2. Role player does not engage in nonverbal behavior which makes tutor laugh (e.g., crosses eyes).
3. Role player does not make "grabbing responses" at tutor.
4. Role player's nonverbal response does not cue next tutor response (e.g., points to block).

### Non-target responses (may be 'NA')

1. Role player uses similar non-target responses across trials.
2. Role player uses similar non-target responses across sessions.
3. Role player allows tutor to use full swing.
4. Correction loop (may be 'NA')

### Correct/Incorrect

1. Role player accurately performs correct response on 3rd loop.
2. Role player continues trial when tutor continues beyond 3rd loop.

### Formulas

- **Total Correct**
  \[
  \text{Total Correct} = \frac{X}{100} \times \text{PER CENT ACCURACY}
  \]

- **Total Correct Plus Incorrect**
  \[
  \text{Total Correct Plus Incorrect} = \text{(DISTINCTED ALL 'NA' RESPONSES)}
  \]

**Comments:**

### Data Analysis Only

ACCURACY \[ \times \] AGREEMENT

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