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VIDEO MODELING TO TRAIN STAFF TO IMPLEMENT DISCRETE-TRIAL INSTRUCTION

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Three new direct-service staff participated in a program that used a video model to train target skills needed to conduct a discrete-trial session. Percentage accuracy in completing a discrete-trial teaching session was evaluated using a multiple baseline design across participants. During baseline, performances ranged from a mean of 12% to 63% accuracy. During video modeling, there was an immediate increase in accuracy to a mean of 98%, 85%, and 94% for each participant. Performance during maintenance and generalization probes remained at high levels. Results suggest that video modeling can be an effective technique to train staff to conduct discrete-trial sessions.

DESCRIPTORS: discrete-trial instruction, staff training, teacher training, video modeling

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Discrete-trial instruction is the primary method used in studies that examine early intensive behavioral interventions and has an established history of effectiveness (see Eikeseth, Smith, Jahr, & Eldevik, 2002). Development of effective and efficient training methods to teach human service and educational staff to conduct discrete-trial instruction is of critical importance in an era of high levels of accountability in our educational systems. Well-trained staff increase the likelihood that instructional curricula are implemented with a high degree of procedural integrity, which should result in greater educational success for the students served. Yet, there is limited published research on the training of staff to conduct discrete-trial instruction. Sarokoff and Sturmey (2004) demonstrated the effectiveness of a training package that consisted of verbal and written instruction, a review of graphed baseline performance, rehearsal of the skills by the trainee, verbal feedback, and modeling of the correct skills by the trainer. All 3 participants showed increases in the percentage of correct discrete-trial teaching responses following training. Leblanc, Ricciardi, and Luiselli (2005) used a similar approach to teach paraprofessionals to implement discrete-trial instruction. A treatment package that included a verbal review of a skill checklist and performance feedback provided after skill demonstration resulted in rapid skill acquisition and maintenance of skills during follow-up assessments.

Video modeling has been shown to be an effective method to teach staff to implement functional analysis sessions accurately (Moore & Fisher, 2007), to train respite-care workers (Neef, Trachtenberg, Loeb, & Sterner, 1991), and for teaching a number of skills to individuals with autism (e.g., Reeve, Reeve,

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Townsend, & Poulson, 2007). Video modeling is a tool used to model skills the viewer is expected to imitate and exhibit in the appropriate situations. Use of video modeling in this capacity has numerous benefits, including demonstration of desired skills in relevant contexts, use of multiple stimulus and response exemplars, and standardization of the presentation of training that permits consistency (Morgan & Salzberg, 1992). The purpose of the current study was to assess the effectiveness of a less resource-intensive training program (e.g., a video model) on the accuracy with which 3 new direct-care staff conducted discrete-trial instruction.

METHOD

Participants

Three newly employed direct-care staff, 1 man and 2 women, of a private school for children and young adults with autism participated in the study (age range, 22 to 25 years). All of the participants held bachelor's degrees and had experience (range, 12 to 24 months) working with children with autism. Kara and Joanne had prior coursework (two courses each within the previous 4 years), training, and paid work experience in applied behavior analysis and discrete-trial instruction within the previous year. Rob did not have prior training or experience in applied behavior analysis or discrete-trial instruction.

Setting and Materials

The study took place in an office at the school during the participants' initial 2-week orientation as new employees. Participants did not spend time in the classrooms or observe discrete-trial instruction during the orientation program. Orientation consisted of didactic instruction, group activities, quizzes, and homework on various topics including first aid, CPR, therapeutic restraint, ethical conduct, applied behavior analysis, and a number of agency-specific training procedures (e.g., vehicle safety, policy and procedures).

Design and Measurement

A multiple baseline design across participants was used. The experimenters videotaped each session and scored the participants' performance on 10 discrete-trial instruction skills after completion of the sessions (see Table 1 for a list of the skills). The percentage of correct teaching behaviors was calculated by dividing the total number of behaviors performed correctly by the total number of skills on the performance checklist, and this ratio was converted to a percentage.

Procedure

Baseline. In a group format, the participants were provided with a brief explanation of the sections of a lesson plan; however, they were not given details about how to conduct discrete-trial instruction. The trainer gave the participants materials to conduct a teaching session (e.g., a match-to-sample lesson plan that contained response definitions and details regarding the teaching procedures, a data-recording sheet, and two sets of cards with the numbers 1 through 3 printed on them) and instructed the participants to do their best at teaching the primary author using the lesson plan as their guide. The responses of the primary author during the 10-trial teaching sessions were randomized using a random number generator (four correct, three incorrect, three no response). During each phase of the study, participants also conducted one supervised session with a student in which they conducted five trials of the same lesson plan. The primary purpose of these one-session probes was to examine whether accurate lesson-plan implementation would generalize to students in the school. The probes were not conducted to assess the effects of discrete-trial instruction on student performance. Due to student availability, the student probes varied across times of the day. Participants' questions

Table 1
Discrete-Trial Instruction Skills Taught Through Video Modeling

	This is an example of discrete-trial training. We will be presenting 11 trials of the matching identical numbers lesson plan. Refer to the lesson plan for a written description of the specific materials, prompts, and procedures used.
1.	Establish ready behavior. *Ready behavior includes hands on lap or table, looking at the teacher, and shoulders facing the teacher.*
2.	Wait for ready behavior. *The teacher waits for 2 seconds of ready behavior before delivering the discriminative stimulus.*
3.	Present choices or stimuli as specified in the lesson plan. *Next, the three choices are presented that are specified in the lesson plan. In this example, the numbers 1, 2, and 3 are placed on the table with the matching stimulus placed below the array directly in front of the student.*
4.	State S^D as specified in the lesson plan. *The teacher presents the S^D exactly as stated in the lesson plan.*
5.	Provide prompt level consistent with the lesson plan. *The teacher provides the prompt level specified on the data sheet. In this example, the student is independent so the teacher will not provide a prompt after the S^D is given.*
6.	Deliver reinforcer as specified in the lesson plan. *The teacher provides the programmed reinforcer immediately following a correct response. In this example, use verbal praise.*
7.	Do not reinforce incorrect responses. *The teacher does not reinforce an incorrect response.*
8.	Conduct a correction trial. *Following an incorrect trial, the teacher conducts a correction trial as specified in the lesson plan. The teacher does not reinforce during correction trials. Sometimes a student does not respond after the S^D is presented. This is called a No-Response trial. The teacher would then present the correction trial as shown earlier. Again, the teacher does not reinforce during correction trials.*
9.	Accurately record data. *Data are recorded according to codes noted on the data sheet and on the lesson plan. Be sure to review the response definition on the lesson plan before collecting data.*
10.	Remove stimuli prior to the start of the next trial. *All stimuli are removed after the trial and stimuli for the next trial are presented. The numbers will be placed in a different order from the previous trial.*

Note. The voiceover script associated with the teaching steps is italicized.

were not answered, and feedback was not provided during baseline sessions.

Video modeling. This study investigated the effects of video modeling, which consisted of a video (7 min 15 s long) that depicted two of the experimenters simulating a teacher and student in a discrete-trial session. A match-to-sample task (the numbers 1 through 3) was targeted for teaching. The stimuli consisted of two sets of cards onto which a single number was displayed. Three different cards were displayed in a horizontal array on a table separated by 5 cm. The teacher placed a card identical to one of the displayed stimuli approximately 5 cm below the display and gave the instruction, "match." A total of 11 trials were demonstrated during the video (four with the student correctly pointing to the matching stimulus, four incorrect responses, and three with no response). The video also included a voiceover script (Table 1) that gave a brief introduction of the video as well as an explanation of each of the modeled teaching skills. Within 10 min after viewing the video, participants were asked to use discrete-trial training during sessions arranged identical to baseline. Video modeling continued until performance stabilized (three consecutive data points within 15 percentage points).

Generalization and maintenance. Generalization across tasks (receptive and expressive) without the use of the video model was assessed using single-session probes. Participants were allowed to review the generalization lesson plan for 10 min prior to conducting a discrete-trial instruction session. The same procedures were used as in the previously mentioned conditions; however, the video model was not used. The receptive task consisted of a match-to-auditory sample program (e.g., receptive object-identification program). Stimuli were arranged in a horizontal array of three, and the participant was required to deliver the discriminative stimulus (S^D) "Give me —." The expressive task consisted of an expressive object-identification task, and the participant was required to deliver the S^D "What is it?" Materials for both generalization tasks consisted of a pen, paper, and tape. A single 1-week maintenance probe was conducted to assess the extent to which teaching behaviors were maintained over time in the absence of continued video modeling. Participants were asked to implement the initial match-to-sample lesson plan with the primary author, as previously described.

Interobserver agreement. Interobserver agreement data were collected during 67% of baseline sessions (M = 92%; range, 75% to 100%), 60% during video modeling (M = 98%; range, 95% to 100%), 67% during generalization (M = 97%; range, 93% to 100%), and 100% during maintenance sessions (M = 99%; range, 99% to 100%).

RESULTS AND DISCUSSION

Figure 1 presents the percentage of discrete-trial instruction skills performed correctly by the participants during baseline, video modeling, generalization, and maintenance phases. During baseline, Kara's, Rob's, and Joanne's performances were generally low (*M*s = 48%, 21%, and 63%, respectively). Following video modeling, all participants showed an increase in performance (*M*s = 98%, 85%, and 94%, respectively). The participants were able to demonstrate high levels of implementation accuracy when different lesson-plan tasks were implemented. During the 1-week follow-up probe, performances of the discrete-trial instruction skills were maintained in the absence of continued video modeling at 100%, 99%, and 99% accuracy (M = 99%). Interestingly, Rob demonstrated higher baseline accuracy during the student probes than during the role play with the trainer. An error analysis showed that his inaccuracies occurred primarily when student errors were made (i.e., when he was required to prompt and correct errors). Because the trainer incorporated errors on six of the 10 trials during the session and the real student did not make any errors during the baseline probe, Rob demonstrated higher accuracy during the student probe. It is also important to note that feedback was provided to Joanne during one session. Because she was the only participant who made the same error consistently during the intervention condition (i.e., she pointed to the wrong stimulus during prompting), the experimenters found it necessary to provide feedback. The other participants did not demonstrate this pattern.

These data show an economical approach to train staff to implement a particular discrete-trial training protocol. The intervention, although there were no programmed consequences, resulted in increased accuracy across participants with respect to the modeled teaching behaviors. Although there was a high degree of accuracy noted in the generalization probes, the absence of baseline data limits the extent to which inferences can be made that this was, indeed, an example of generalization. A voice-over component of the video described the components being modeled; however, it is unclear to what extent this component contributed to the outcomes noted. Also notable was that the video length was approximately 7 min, and the opportunity to imitate the modeled behavior occurred soon after (i.e., within 10 min) the video was viewed. Future research could consider the amount of information presented (e.g., the length of the video) or the time at which viewing and then performing result in acceptable performance. This study focused on the extent to which video modeling improved staff performance and excluded an examination of the effectiveness of discrete-trial instruction on student performance. Future studies might wish to address this limitation and formally examine how student performance varies as a function of staff accuracy. Finally, we opted to use a multiple baseline design because

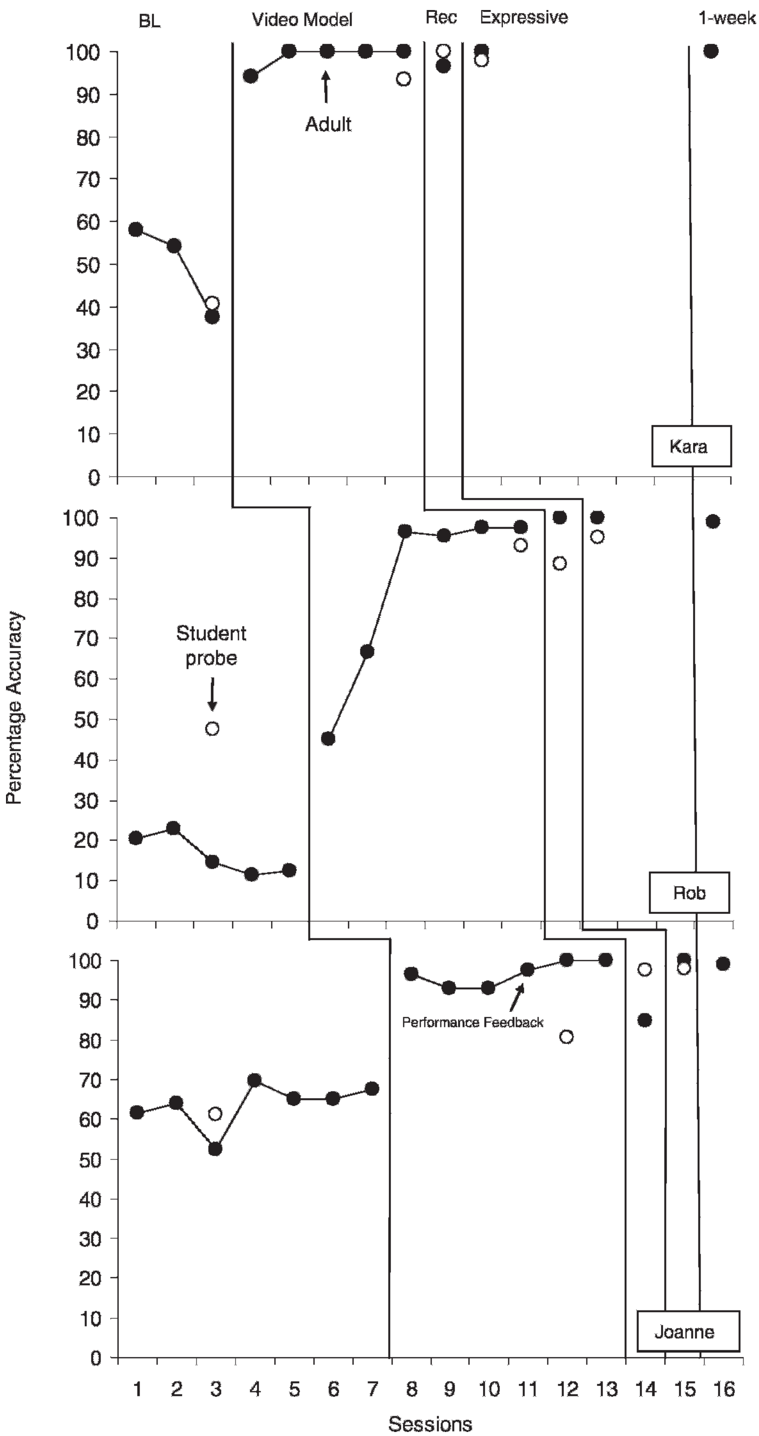

Figure 1. Percentage of discrete-trial teaching skills implemented accurately by Kara, Rob, and Joanne across all phases of the study. Filled circles represent percentage accuracy when the participant delivered instruction to an adult in a role-play session. Open circles represent percentage accuracy when the participant delivered instruction to a student.

a reversal was not possible. An extension of this work might include an examination of video modeling on this and other types of instructional practices (e.g., shaping, chaining) with a different design that allows greater experimental control. These and other variables may help to point researchers in the direction of creating a viable teaching technology.

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