
TEACHING A SIMPLE MEAL PREPARATION SKILL TO ADULTS WITH MODERATE AND SEVERE MENTAL RETARDATION USING VIDEO MODELING

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We evaluated whether adults with mental retardation in the moderate or severe range would acquire simple meal preparation skills via video modeling. Training was conducted in the kitchen of the participants' day treatment setting. The intervention consisted of (i) watching a video of an adult with a developmental disability making a peanut butter and jelly sandwich and (ii) receiving verbal praise for each step of the task that was performed correctly. All three participants mastered the task and demonstrated generalization across settings. All three participants also demonstrated maintenance of the skill one month following mastery. Copyright © 2003 John Wiley & Sons, Ltd.

It is well documented that individuals with developmental disabilities may acquire new skills after observing other individuals with or without disabilities model those skills. Werts, Caldwell, and Wolery (1996), for example, found that students with disabilities acquired chained academic tasks such as using a calculator and playing an audiotape after systematically observing proficient peer models perform those tasks. Similarly, Griffen, Wolery, and Schuster (1992) showed that students with disabilities acquired almost all of the steps necessary to independently complete snack preparation tasks after observing other students receive direct instruction on the tasks. These results suggest that a useful strategy for establishing new skills is to arrange for the systematic observation of another individual modeling or receiving direct instruction on the skill.

One promising approach to ensuring skill acquisition is through the use of videotape modeling procedures. Video modeling can be defined as the presentation of a videotape of a model completing a total chained task that participants are required to view at the beginning of each training session (LeGrice & Blampied, 1994). A

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variety of skills have been taught to individuals with developmental disabilities using video modeling procedures, including conversation skills (Charlop & Milstein, 1989; Taylor, Levin, & Jasper, 1999; Wert & Neisworth, 2003), self-help or daily living skills (Lasater & Brady, 1995; Norman, Collins, & Schuster, 2001; Shipley-Benamou, Lutzker, & Taubman, 2002), complex play sequences (D'Ateno, Mangiapanello, & Taylor, 2003), and perspective taking (Charlop-Christy & Daneshvar, 2003). Importantly, skills established by video modeling appear to generalize and be maintained as well. For example, Charlop and Milstein (1989) demonstrated the generalization of conversational speech across settings, toys, and people; Charlop-Christy & Daneshvar (2003) showed the generalization of perspective taking across tasks; and Lasater and Brady (1995) demonstrated the generalization of self-help skills across settings. Results from studies evaluating the maintenance of such effects have been similarly encouraging (see Charlop & Milstein, 1989; Lasater & Brady, 1995). Video modeling may be beneficial in academic and habilitation settings because it is a cost-effective means of teaching. Staff teaching time might be freed up for other responsibilities and it is not always necessary to have a proficient model on hand to demonstrate the particular skill (see Charlop-Christy, Le, & Freeman, 2000). Moreover, if individuals are ultimately able to display newly acquired skills in more than one setting, video modeling may be an efficient approach to promoting independence.

A variety of types of model have been used in video modeling procedures. In some studies, an adult or child without a disability is shown as the model (e.g., Charlop & Milstein, 1989; Charlop-Christy & Daneshvar, 2003; D'Ateno et al., 2003; Taylor et al., 1999), while in other studies the performance of the skill is shown from the perspective of the learner (e.g., Norman et al., 2001; Shipley-Benamou et al., 2002). The procedure is also used with the learner himself or herself serving as the model (Lasater & Brady, 1995; Sherer et al., 2001; Wert & Neisworth, 2003). Sherer et al. (2001) reported no differences in the rate of task acquisition when the model was the learner or another individual. Likewise, Ihrig & Wolchick (1988) reported no differences when peers or adults served as live models. These results do not coincide with those of Barry & Overmann (1977), who found that *in vivo* modeling by peers was more effective than *in vivo* modeling by adults.

The purpose of this project was to confirm that individuals with developmental disabilities may not only acquire, but generalize and maintain, response chains after observing a model demonstrate the chain. In this particular case, the modeled task was presented via computer video. Specifically, we questioned the efficacy of video modeling in producing generalization across settings and response maintenance when a peer with a disability served as the model. It is possible that a peer with a disability is perceived by the learner as being more similar to himself or herself (see, e.g., Bandura, Ross, & Ross, 1961). Video modeling was used to teach a

sandwich-making skill to three adults with mental retardation in the moderate or severe range. Generalization and maintenance of the skill were also assessed.

METHOD

Participants and Setting

Three adults diagnosed with mental retardation in the moderate or severe range participated. All were receiving day treatment services at an adult habilitation center where the acquisition of simple meal preparation skills was a short-term goal. A long-term goal for the participants was to transition from the day treatment setting into a sheltered workshop housed in the same agency. Participants were acquiring skills in day treatment that would enable them to be successful in the sheltered workshop.

Jack was a 33-year-old male diagnosed with mental retardation in the severe range; he had a reported IQ of 30. Jack was able to feed himself independently, but required assistance in dressing and bathing. Jack was taking 50 mg of Zoloft once daily and 25 mg of Seroquil twice daily throughout the duration of the study. George was a 22-year-old male diagnosed with mental retardation in the moderate range and Down syndrome; he had a reported IQ of 32. George was able to complete a number of self-care skills, such as eating, toileting, and dressing, independently. Sue was a 37-year-old female diagnosed with mental retardation in the severe range; she had a reported IQ of 24. Sue was able to complete a number of self-care tasks independently, but required assistance with bathing.

All instructional and intervention probe sessions were conducted in the kitchen of the participants' day treatment setting. The room included a 4 ft × 6 ft table, a refrigerator with a sliding glass door, a sink, counters, and a microwave oven. The sinks and the counter were directly to the left of the door when one first entered the room. Generalization probe sessions were conducted in the kitchen of the sheltered workshop, which was located across the street. The room included a 4 ft × 6 ft table, a refrigerator that could be opened by pulling the handle, a sink, counters, and a microwave oven. The sinks and the counter were directly to the right of the door when one first entered the room.

Tasks and Materials

The chained task of making a peanut-butter and jelly sandwich was chosen for all three participants. The task analysis and materials used are shown in Table 1. The task analysis was devised after several observations of an adult with a developmental disability who was proficient in performing the task. That individual served as the model in the video that was presented to participants.

Table 1. Task analysis for making a sandwich

<i>Steps in the task analysis</i>	<i>Materials</i>
1. Go to refrigerator	Jar of jelly
2. Get jar of jelly out of refrigerator	Jar of peanut butter
3. Get bread out of refrigerator	Bread
4. Bring jar of jelly and bread to table	Butter knife
5. Get butter knife from counter	Plate
6. Get plate from counter	
7. Get peanut butter from counter	
8. Bring knife, plate, and peanut butter to table	
9. Remove two slices of bread from bag	
10. Place one or both slices on plate	
11. Open jar of peanut butter	
12. Scoop out peanut butter with knife	
13. Spread peanut butter onto slice of bread	
14. Open jar of jelly	
15. Scoop out jelly with knife	
16. Spread jelly onto slice of bread	
17. Place two slices of bread together	

A lap-top PC computer with a 12.5 in $\times$ 10 in screen was used to present the video of the model performing the task. The video was played in Windows Media Player.

Design

A multiple probe design across participants was used to evaluate the effects of video modeling. Probe conditions were implemented before and during instruction, and after criterion performance was established on the task. Baseline data were collected in the training setting and in the generalization probe setting. Video modeling was presented in the training setting. After criterion performance was demonstrated, generalization probes were presented. Maintenance probes were conducted in the training setting one month following the demonstration of criterion performance. Throughout the study, participants were allowed to consume their sandwiches, if they so chose, upon the completion of each session.

Procedure

Baseline

Participants’ abilities to complete the chained task were probed during baseline using a multiple-opportunity method (Cooper, Heron, & Heward, 1987). At the beginning of each probe session, a participant was given the verbal instruction ‘Make a sandwich’. If the participant did not respond after 3 s, the instructor

completed the next step of the chain. This process was repeated for each of the remaining steps. If the participant became distracted, he or she was reminded to 'make a sandwich'. No feedback was provided during baseline probe sessions. No prompts were delivered. Participants remained in baseline until their data were judged to be visually stable. At least one probe session was completed by each participant in the generalization setting. The procedure used in the generalization setting was identical to that used in the training setting.

Video Modeling Intervention

During the intervention, each session began with one intervention probe, which was identical to the baseline probe. The participant then viewed an approximately 2.5 min video of an adult with a developmental disability modeling the task in the training setting. If participants became distracted, they were verbally prompted to watch the video and were praised for good attending. The participant was then given the opportunity to practice performing the task. When the participant completed a step accurately, he or she was verbally praised with praise that was specific to the particular step (e.g. 'good spreading the jelly'). If the participant failed to perform a step after 3 s, the instructor completed that step. If the participant performed a step inaccurately, no corrective feedback was delivered. No prompts were delivered during practice. If the participant performed 100% of the steps correctly during practice, the session was terminated. If the participant did not perform all of the steps correctly during practice, he or she viewed the video once more and was given the opportunity to practice and receive verbal praise for correct steps once more, after which the session was terminated. The intervention continued for each participant until he or she performed 100% of the steps correctly during three consecutive intervention probes.

Generalization Probes

Generalization probes were conducted in the kitchen of the sheltered workshop one day immediately following a participant's demonstration of criterion performance during the video modeling intervention. Generalization probes were identical to baseline probes. If a participant did not demonstrate 100% accuracy, he or she completed an additional training session in the training setting. A second generalization probe was conducted one day immediately following.

Maintenance

Maintenance probes were conducted one month following the establishment of criterion performance, and were identical to baseline probes.

Dependent Measure and Interobserver Agreement

The dependent measure throughout all phases was the percentage of steps performed correctly during baseline, intervention, generalization, and maintenance probes. If a participant performed the steps out of order but correctly, the particular step was scored as correct. Reliability of recording was tested by assessing per cent observer agreement calculated by dividing the number of agreements (i.e. correct–correct, incorrect–incorrect) by the number of agreements and disagreements. Agreement data were collected during 63% of all of the sessions. Resultant interobserver agreement was 99.7%.

RESULTS

Shown in Figure 1 are the three participants' performances on baseline, intervention, generalization, and maintenance probes. The figure shows that neither Jack nor George were able to complete the task prior to the intervention in either the training setting or the generalization setting, as both performed no more than 35% of the steps correctly. Although Sue performed as many as 88% of the steps correctly during some baseline probes, her performance was inconsistent, ranging from 41 to 88% steps correct throughout baseline. Whereas a goal for Jack and George was to establish the skill, the skill already appeared to be in Sue's repertoire, yet intervention was necessary to stabilize her performance. Jack demonstrated criterion performance after ten training sessions; George demonstrated criterion performance after 13 training sessions; and Sue demonstrated criterion performance after 22 training sessions. George failed to demonstrate generalization immediately following training, as he performed only 71% of the steps correctly during the first generalization probe to follow training. Following one additional training session in the training setting, George then performed 100% of the steps correctly in the generalization setting. Jack and Sue both demonstrated generalization immediately following mastery, and all three participants performed with 100% accuracy at one month follow-up.

Although Sue performed 71–88% of the steps correctly during the latter half of baseline, there were steps that she completed incorrectly throughout baseline that she later performed correctly during the intervention. Specifically, she was unable to get the jar of jelly out of the refrigerator during baseline, but did so reliably beginning with the third intervention probe. Likewise, she was unable to spread peanut butter onto a slice of bread throughout baseline, but did so reliably beginning with the second intervention probe. Finally, she was unable to spread jelly onto a

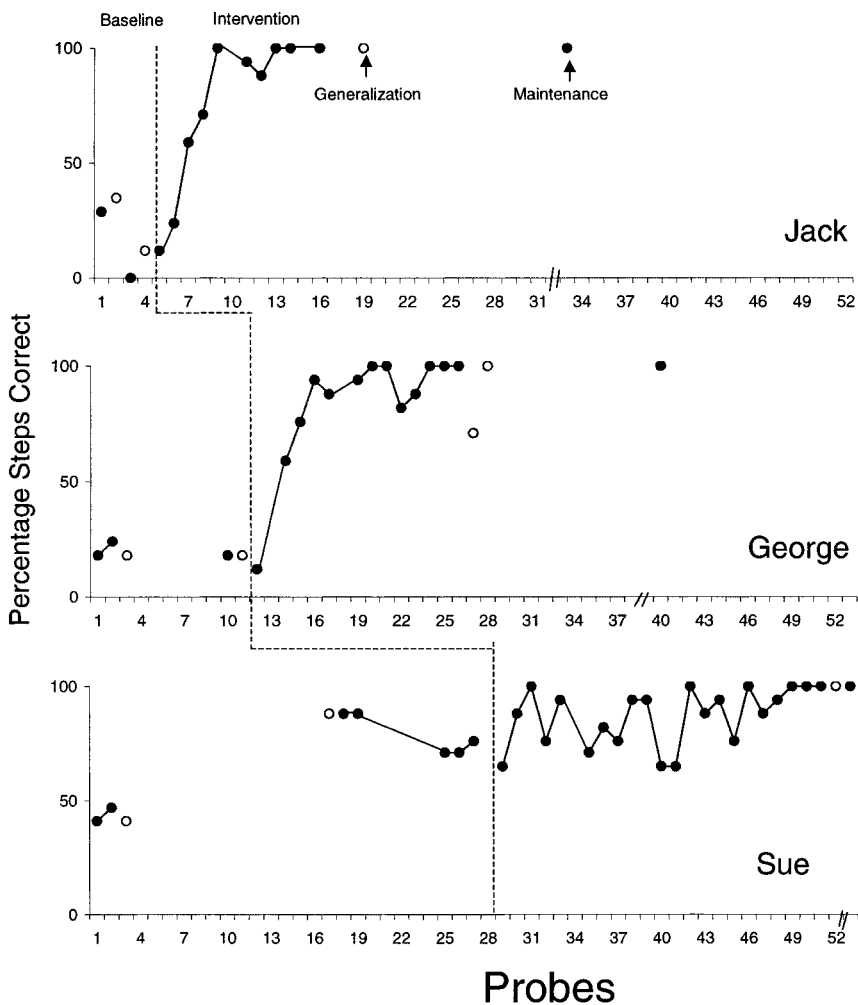


Figure 1. Percentage steps performed correctly during baseline, intervention, generalization, and maintenance probes, for Jack, George, and Sue.

slice of bread throughout baseline, but did so reliably beginning with the first intervention probe.

During baseline and intervention probes, only Jack and Sue required reminders to ‘make a sandwich’. Neither participant required more than three reminders per probe. Likewise, only Jack and Sue required prompts to watch the video during video viewing, although the prompts were not often necessary for Jack. Neither participant required more than two verbal prompts per video viewing.

DISCUSSION

These results confirm that video modeling is an effective instructional strategy for teaching a simple meal preparation skill to adults with moderate or severe mental retardation. In this case, an adult peer of the three participants who also had a developmental disability served as the model. These results are particularly significant in light of the demonstration of generalization and maintenance by all three participants, as they will be able to use the skill in present and future residential and day treatment settings. A long-term goal for the three participants is to transition into the sheltered workshop setting where the generalization probes were conducted and where individuals often prepare their own lunches and snacks. Thus, consistent with the findings of Lasater and Brady (1995), a treatment package consisting of video modeling and verbal praise was sufficient in establishing generalization across settings. Although George did not demonstrate generalization immediately following mastery, only one additional training session was necessary for him to do so. Future research might focus on the efficacy of video modeling in ensuring generalization to settings more dissimilar from that in which training is conducted.

Some methodological limitations warrant mention. First, Jack's and George's baselines were relatively brief. The definition of a multiple probe design requires that each participant complete three consecutive probe trials immediately prior to the introduction of the intervention (Tawney & Gast, 1984), and this was not done for Jack or George. Second, Sue's performance during intervention probes did not always differ substantially from her performance during baseline probes, making it less convincing that the video modeling intervention alone was responsible for the changes in her behavior. Staff reported that Sue had a mild illness throughout portions of the project. It is possible that she had mastered many of the steps prior to the study, but her accuracy was inconsistent for this reason. Third, the intervention consisted of a combination of video modeling and positive reinforcement in the form of verbal praise for each step performed correctly during training. Thus, it is difficult to discern whether the changes observed in participants' behavior were due to video modeling, verbal praise, or a combination of both variables.

In conclusion, video modeling appears to be an effective and efficient training procedure for adult habilitation. Although it was occasionally necessary to reorient participants to the task and to prompt them to attend to the video, the requirements of the instructors were not great. Thus, staff in adult habilitation settings may find video modeling to be a valuable teaching approach: By removing the responsibility of prompting and prompt fading from staff, little specialized skill or training is required to deliver the intervention.

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