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Comparing Video Prompting to Video Modeling for Teaching Daily Living Skills to Six Adults with Developmental Disabilities

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Abstract: We compared two procedures (video prompting versus video modeling) for teaching six adults with developmental disabilities to set a table and put away groceries. Video prompting involved 10 separate video clips, each showing one step of the task analysis. Video modeling involved a single video showing all 10 steps from beginning to end. After watching the respective video clips, participants were given the opportunity to complete the task. Video prompting and video modeling procedures were counter-balanced across tasks and participants and compared in an alternating treatments design. Video prompting was effective in promoting rapid acquisition across both tasks in all but one case. Video modeling, in contrast, was generally shown to be ineffective. These data suggest that the number, duration, and/or perspective from which the video clips are filmed may influence their effectiveness as a teaching tool for individuals with developmental disabilities.

An important long-term objective of educational programs for people with developmental disabilities is the promotion of valued social roles (Wolfensberger, 2000). Given this objective, behavior modification should focus, in part, on teaching functional, age-appropriate skills that enable the individual to assume valued social roles (Brown, 1979; Thompson & Grabowski, 1977). One valued social role for adults in Western societies is independence in completing various daily living tasks, such as putting away groceries and setting the table for lunch (Kroska, 2003; Wilk, 1989). When an individual presents with significant deficits in adaptive behavior functioning, as is common for many adults with developmental disabilities (Jacobson & Ackerman, 1990; Kraijer, 2000), they may be unable to assume this valued social role. Explicit training is often required to teach the necessary skills (Duker, Didden, & Sigafoos, 2004). Until such time when this training is successful, the individual will remain dependent on others, with the consequential risk of being de-valued (Wolfensberger). In addition, their lack of contribution to the completion of daily living tasks creates an imbalance in the division of labor and thus increases the overall burden of care (Haveman, van Berkum, Rejinders, & Heller, 1997). Given the social value of independent living, it is not surprising that development of daily living skills figures heavily in the habilitative plans of adults with developmental disabilities (Stancliffe, Hayden, & Lakin, 2000).

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Nor is it surprising that a considerable amount of applied intervention research has focused on developing new and more effective procedures for teaching daily living skills to individuals with developmental disabilities (Belfiore & Mace, 1994). Along these lines, recent evidence suggests that video-based instruction may be a promising new technology for teaching individuals with developmental disabilities (Sturmey, 2003). To date, video-based instructional procedures have been used with some success in teaching a range of adaptive behaviors to individuals with developmental disabilities, including communication (Charlop & Milstein, 1989; Wert & Neisworth, 2003), play (D'Ateno, Mangiapanello, & Taylor, 2003), perspective taking (Charlop-Christy & Johneshvar, 2003), social initiation (Nikopoulos & Keenan, 2003), spelling (Kinney, Vedora, & Stromer, 2003), vocational and leisure tasks (Grice & Blampied, 1994), self-care (Norman, Collins, & Schuster, 2001; Tiong, Blampied, & Le Grice, 1992), and daily living skills (Graves, Collins, Schuster, & Kleinert, 2005; Rehfeldt, Dahman, Young, Cherry, & Davis, 2003; Shimada, Shimizu, & Ujimori, 1998; Shipley-Benamou, Lutzker, & Taubman, 2002; Sigafoos et al., in press).

This literature has included various applications of video-based instruction. Two general procedures can be delineated: *Video Modeling* and *Video Prompting* (Alberto, Cihak, & Gama, 2005). Video modeling generally involves making a videotape of someone performing the target behavior or completing the designated task. The videotape is then shown to the individual at the beginning of each training session. After viewing the entire videotape—from beginning to end—the individual is then given the opportunity to perform the behavior or complete the task in its entirety.

A study by Rehfeldt et al. (2003) illustrates the application of video modeling for teaching daily living skills. The authors focused on teaching three adults with mental retardation to make a sandwich. Their 2.5 min instructional video showed a different adult (i.e., not one of the participants) making a sandwich. Participants were verbally prompted to watch the video prior to each session. After watching the entire video, the participant was given the opportunity to make a sandwich. Results showed that implementation of this video modeling procedure was associated with an increase in the percentage of steps completed correctly and attainment of 100% correct by all three participants within three to seven training sessions. Their data suggest that the video modeling procedure was effective in teaching these adults to make a sandwich.

In contrast to video modeling, video prompting involves showing the participant a video clip of one step of the task and then giving the person the opportunity to complete that step before the next step is shown. In addition, these video prompts are often filmed from the perspective of the participant and thus have a subjective viewpoint (Norman et al., 2001; Shipley-Benamou et al., 2002). This subjective viewpoint differs from video modeling, in which the videotape is typically filmed from the perspective of the spectator. To illustrate, Sigafoos et al. (in press) evaluated a video prompting procedure for teaching microwave oven use to three adults with developmental disabilities. The procedure involved showing a video clip of only one step of the task and then giving participants the opportunity to complete that step of the task. After this, a video clip showing the next step of the task was presented and so forth until all 10 steps had been prompted. In addition, each video clip was filmed from the perspective of the person completing the task. With this procedure, two of the three adults acquired the task and continued to perform 80–100% of the steps correctly when video prompting was withdrawn and at a 10-week follow-up.

Because video modeling and video prompting differ in these two obvious ways (i.e., number of steps shown in each video clip and the perspective from which the video is filmed), one might expect such differences to influence the relative effectiveness of the two procedures. For example, the literature on response chaining could be interpreted to suggest that the step-by-step approach used in video prompting might result in faster acquisition, at least when teaching multi-component tasks, such as setting a table or putting away a bag of groceries (Duker et al., 2004). Alternatively, by showing the entire sequence of steps in a single video clip, as is typically the case with video modeling, a learner might come to more quickly integrate each separate step of the task. Similarly, the difference in the perspective from which the video clips are filmed (i.e., spectator versus participant viewpoints) might also influence the relative effectiveness of video modeling versus video prompting.

While these are interesting speculations with implications for the design of video-based instructional procedures, there appears to be no research comparing the relative effectiveness of video modeling with video prompting. Previous studies have compared video modeling to live (in vivo) modeling (Charlop-Christy, Le, & Freeman, 2000) and to static picture prompts (Alberto et al., 2005). In Charlop-Christy et al., video modeling was associated with faster acquisition and better generalization of social, play, and self-help skills in children with autism than in vivo modeling. In Alberto et al., there was no difference in acquisition of community skills (i.e., using an ATM machine to withdraw cash and using a debit card to purchase groceries) for the video modeling versus static picture prompt conditions across eight middle-school students with moderate mental retardation. The present study compared acquisition rates for two daily living tasks when instruction occurred with video modeling versus video prompting. Data of this type may enable educators to design and implement more effective instructional programs using video technology.

Method

Participants

Six adults (five men, one woman) with developmental disabilities participated. All six lived in community-based group homes and attended the same vocational program during the day. Residential and vocational staff assessed participants with the Vineland Adaptive Behavior Scales—Interview Edition (Sparrow, Balla, & Cicchetti, 1984). Results indicated that all six participants had substantial deficits in adaptive behavior functioning. More specifically, they showed substantial deficits in their ability to complete tasks in the domestic living domain and these deficits were not due to any physical impairment. These six adults were selected for this study because of their deficits in daily living skills and because achieving independence in this domain was a habilitative priority for each of them. They were also considered good candidates for learning from video modeling or video prompting because their vision and hearing acuities were all within the normal range. Two of the participants (Kurt and John) had prior experience with video-based instruction. Specifically, both had been taught to wash dishes using an instructional package that included watching video clips of each step of the task (Sigafoos et al., 2006). None of the other four participants (Jack, Ron, Gina, and Steve) had ever received any video-based instruction. Table 1 provides demographic information for each participant.

Setting

The study was conducted in the dining room and kitchen of the participants' vocational center. The kitchen was equipped with a refrigerator, coffee maker, sink, counters, microwave oven, storage cabinets, and a rubbish bin. The dining room consisted of a large table with seating for eight adults and a sideboard on which plates and utensils were stored. Training was conducted individually with each participant to avoid incidental modeling effects.

Task and Materials

Intervention focused on teaching the participants to complete two daily living tasks: (a) putting away a bag of groceries, and (b) arranging one place setting at a table. Residential and vocational staff reported that none of these six participants could independently complete either of these two tasks. In addition, it appeared that none had received any systematic training in the past to develop skills related to these two tasks. These tasks were selected because they were considered functional, age-appropriate, and relevant to their vocational and residential placements. Teaching these tasks was also consistent with the overall habilitative goal to improve their adaptive behavior functioning.

The materials for putting away groceries included a paper bag filled with 10 grocery items (i.e., two apples in a plastic bag, two oranges in a plastic bag, a bag of frozen peas, a bottle of salad dressing, a box of cereal, a

TABLE 1

Demographic Information for Each Participant, Including Diagnoses, IQ, and Vineland Age Equivalency Scores (years-months) for the Social, Communication, and Daily Living Skills Domains, and Task/Procedure Allocation

Name	*Age*	*Diagnoses*	*IQ*	*Social*	*Com.*	*Daily*	*Task/Procedure*
Jack	36	Moderate MR, Mood Disorder, PDD	36	2–5	2–11	2–3	Table/Model Grocery/Prompt
Ron	41	Moderate MR, Autism	45	Below 0–1	0–11	4–8	Table/Prompt Grocery/Model
Kurt	28	Moderate MR, Autism	46	4–11	3–10	8–9	Table/Prompt Grocery/Model
Gina	36	Mild MR, Autism	51	3–6	7–2	3–7	Table/Model Grocery/Prompt
John	27	Mild MR, Autism	69	2–1	1–11	2–11	Table/Prompt Grocery/Model
Steve	32	Moderate MR, Asperger's, PDD	46	0–9	3–2	5–2	Table/Model Grocery/Prompt

box of snacks, a can of beans, and a can of juice). The materials for setting the table consisted of a placemat, a large and small plate, flatware (i.e., butter knife, regular knife, fork, spoon, and dessert fork and spoon), a cloth napkin, and a glass. Task analyses (Tables 2 and 3) were adapted from the Murdock Center Program Library (Wheeler et al., 1997), so as to ensure the two tasks were comparable in terms of difficulty and number of steps.

Two versions of each task were filmed, so that each task could be taught using either the video prompting or video modeling procedure. All of the videos used in this study were filmed with a Sony DSC-F828 Cyber-shot camera. The instructional videos were shown to the participants on a portable Window XP-based Mercury MiniMerc™ computer using commercially available software (i.e., Windows Media Player™). The computer screen measured 18.5 x 24.5 cm.

Video prompting. For the video prompting version of each task, 10 separate video clips were filmed. Each clip showed only one step of the task. These clips were filmed from the performer's perspective. That is, when participants viewed a video clip, they saw the step being completed from the perspective of the performer completing the task, not from the perspective of a spectator watching someone else complete the step. For the *Table Setting* task, each video clip lasted from 10 to 17 s with an average duration of 12.4 s. For the *Grocery* task, each video clip lasted from 12 to 42 s with an average duration of 18.5 s. In addition to demonstrating the actions required for completing the step, each video clip also included a one-sentence voice-over instruction. For example, the video clip for Step 1 of the *Table Setting* task consisted of an over-the-shoulder shot of the performer's two hands picking up the placemat and placing it on the table. While doing this, the performer—who could be heard but not seen—said: *First, put down the placement.* As another example, the video clip for Step 5 of the *Grocery* task showed the performer's right hand and forearm taking the fruit items (i.e., two apples and two oranges) and putting them in the bowl. The camera for this shot was positioned behind and slightly to the right of the performer so that when viewing this clip, the participant saw a hand—and part of the performer's arm—placing first the apples, then the oranges into the bowl. While doing this, the performer said: *Now, put the fruit in the bowl.*

Video modeling. For the video modeling versions of each task, a single video was made showing all 10 steps of the two respective tasks being completed from beginning to end. The respective durations of the two videos were 1 min 37 s (*Table Setting* task) and 2 min 42 s (*Grocery* task). These videos were filmed from the perspective of the spectator. That is, when

TABLE 2

Task Analysis for Setting the Table

Steps in the Task Analysis
1. Put down the placemat.
2. Put the large plate in the center of the placemat.
3. Put the small plate to the upper left of the large plate.
4. Put the butter knife on the small plate.
5. Put the napkin to the right of the large plate.
6. Put the knife and spoon on the napkin.
7. Put the fork to the left of the large plate.
8. Put the dessert spoon and fork in front of the large plate.
9. Put the glass in the upper right hand side of the placemat.
10. Sit down at your place and eat a small meal.

TABLE 3

Task Analysis for Putting Away the Groceries

Steps in the Task Analysis
1. Take the groceries out of the bag.
2. Fold the bag and place it under the counter.
3. Take the fruit out of the plastic bag.
4. Put the plastic bags under the counter.
5. Get down the fruit bowl.
6. Put the fruit in the bowl.
7. Put the peas in the freezer.
8. Put the salad dressing in the refrigerator.
9. Put the cans in the cupboard.
10. Put the boxes on top of the refrigerator.

participants viewed the video, they saw it from the perspective of a spectator watching someone else (one of the authors) complete the task. In addition to demonstrating the actions required for completing the task, these videos also included one-sentence voice-over instructions for each step of the task. For example, with the *Table Setting* task, the video showed a person first picking up the placemat from the side table and placing it on the table and then the performer went on to initiate the next step of the task and so forth until the entire task had been completed. The accompanying voice-over instructions were the same as those used in the video prompting versions.

Dependent Measure and Data Collection

Using task analyses shown in Tables 2 and 3 as data sheets, we recorded whether each step of the task was completed correctly or not on a session-by-session basis. To be scored as correct during baseline, the first step (i.e., put down the placemat or remove items from grocery bag) had to be completed within 30 s of the initial instruction (e.g., *Ok Jack, set the table* or *Ok Gina, put away these groceries*). All subsequent steps had to be completed within 30 s of the completion of the previous step. During intervention with video prompting, only steps completed within 30 s after viewing the video clip for that step were scored as correct. During intervention with video modeling, the first step had to be initiated within 30 s of the end of the video and all subsequent steps had to be completed within 2 min of the initial step to be scored as correct. In scoring correct responses, it is important to note that task steps did not necessarily have to be completed in the order specified in the respective task analysis order to be scored as correct. For example, with the Grocery task, a participant would be given credit for having completed Step 7 (i.e., Put the peas in the freezer) if the person successfully placed the bag of frozen peas in the freezer at any time during the session.

Data were collected during one-to-one training sessions that were scheduled twice per week. Sessions lasted approximately 10 min. After each session, the participants were given a choice of snack items for participating, but these snacks were not contingent upon how well they had completed the task.

Experimental Design

The study design combined a multiple-probe across subjects design (Horner & Baer, 1978) with an alternating treatments design (Barlow & Hersen, 1984). The multiple-probe design allowed us to demonstrate a functional relation between introduction of video-based instruction and increases in the percentage of steps completed correctly. The alternating treatments design allowed us to compare the relative effectiveness of video prompting and video modeling. To further control for type of task, we counter-balanced the use of video prompting and video modeling across tasks and participants as indicated in Table 1. When visual analysis of the trends from the alternating treatments phase indicated that video prompting was superior to video modeling, a final (*Prompt All*) phase was implemented in which both tasks were taught using video prompting.

Procedure

Baseline. During baseline, participants were individually brought to the kitchen for the *Grocery* task or to the dining room for the *Table Setting* task. The participant was placed in front of the grocery bag (table) and asked to *put away the groceries* (*set the table*). During the session, the trainer and a reliability observer (when available) recorded the number of steps that the participant completed correctly. If the person did not initiate the first step of the task within 30 s or complete subsequent steps with 30 s of a previous step, the session was terminated. After the session, the participant was given a choice of snacks.

Prompt vs. model. During this phase, participants were brought to the kitchen or dining room and provided with training using either video prompting or video modeling, depending on the task that had been assigned to each condition for that person (see Table 1). The Mercury computer was placed in a location where it could be easily operated by the trainer and viewed by the participant. For the *Grocery* task, the computer was placed on the kitchen counter about 90 cm to the right of the bag of groceries. For the *Table Setting* task, the computer was placed on the table about 90 cm to the right of the place setting. This training phase continued until either one task had been taught to criterion (i.e., 100% correct over 2 of 3 successive sessions) or until visual analysis of the graphed data showed a clear and consistent separation in the data paths for the two conditions over at least nine sessions (i.e., video prompting vs. video modeling).

During training sessions that involved video prompting, the participant was oriented toward the computer screen and the trainer said, *Watch this.* The trainer then showed the video clip showing the first step of the task. When this video clip ended, the trainer said *Now you do it.* At this point, the participant was given 30 s to complete the step. If the participant failed to complete the step within 30 s, the trainer completed the step as unobtrusively as possible and proceeded to show the next clip in the task analysis using the same procedures as for the first step. This was done because each video clip showed only one step of the task and participants were only expected to complete one step at a time. We therefore had to complete steps that the participants failed to do so as to ensure the progression of the task would remain in sync the order of video prompts. No additional instructions, feedback, or prompts were delivered other than the one-sentence voice-over instruction provided in the video clips.

During training sessions that involved video modeling, the participant was oriented toward the computer screen and the trainer said, *Watch this.* The trainer then showed the entire video of the task being completed. When the video ended, the trainer said *Now you do it.* The participant was then given 30 s to initiate the first step and 2 min to complete the remaining steps in the task. If the participant failed to complete the entire task within 2 min of initiating the task, the session was terminated. Unlike the procedure for video prompting, with video modeling, any steps that were not successfully completed, by the participant were left uncompleted, because there was no need to ensure the participant remained in sync with separate video clips and correct performance did not necessarily require task steps be completed in the order specified in the respective task analysis. No additional instructions, feedback, or prompts were delivered, other than the one-sentence voice-over instructions provided in the video.

Prompt all. When data from the previous phase showed that video prompting was more effective, the task that had been taught using video modeling was shifted to the video prompting procedure. That is, during this phase, video prompting was used for both tasks. A modification was made to the procedures for Ron beginning with Session 29 (see Figure 1). Specifically an error correction procedure was added to the training sessions for teaching table setting. Error correction was considered necessary because he consistently made errors with respect to the placement of utensils. Error correction was implemented if

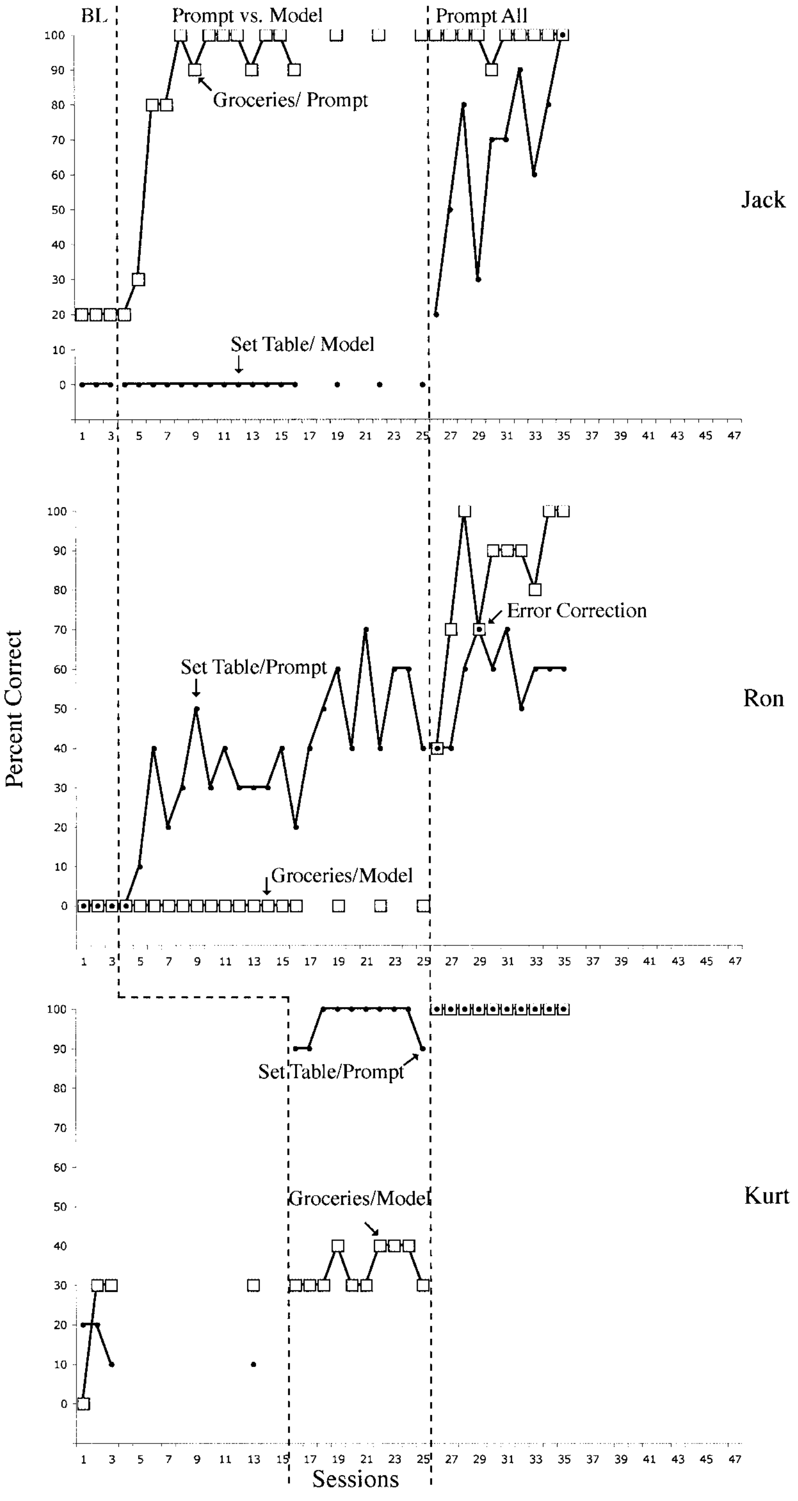

Figure 1a. Percentage of steps completed correctly across sessions and tasks for Jack, Ron, and Kurt.

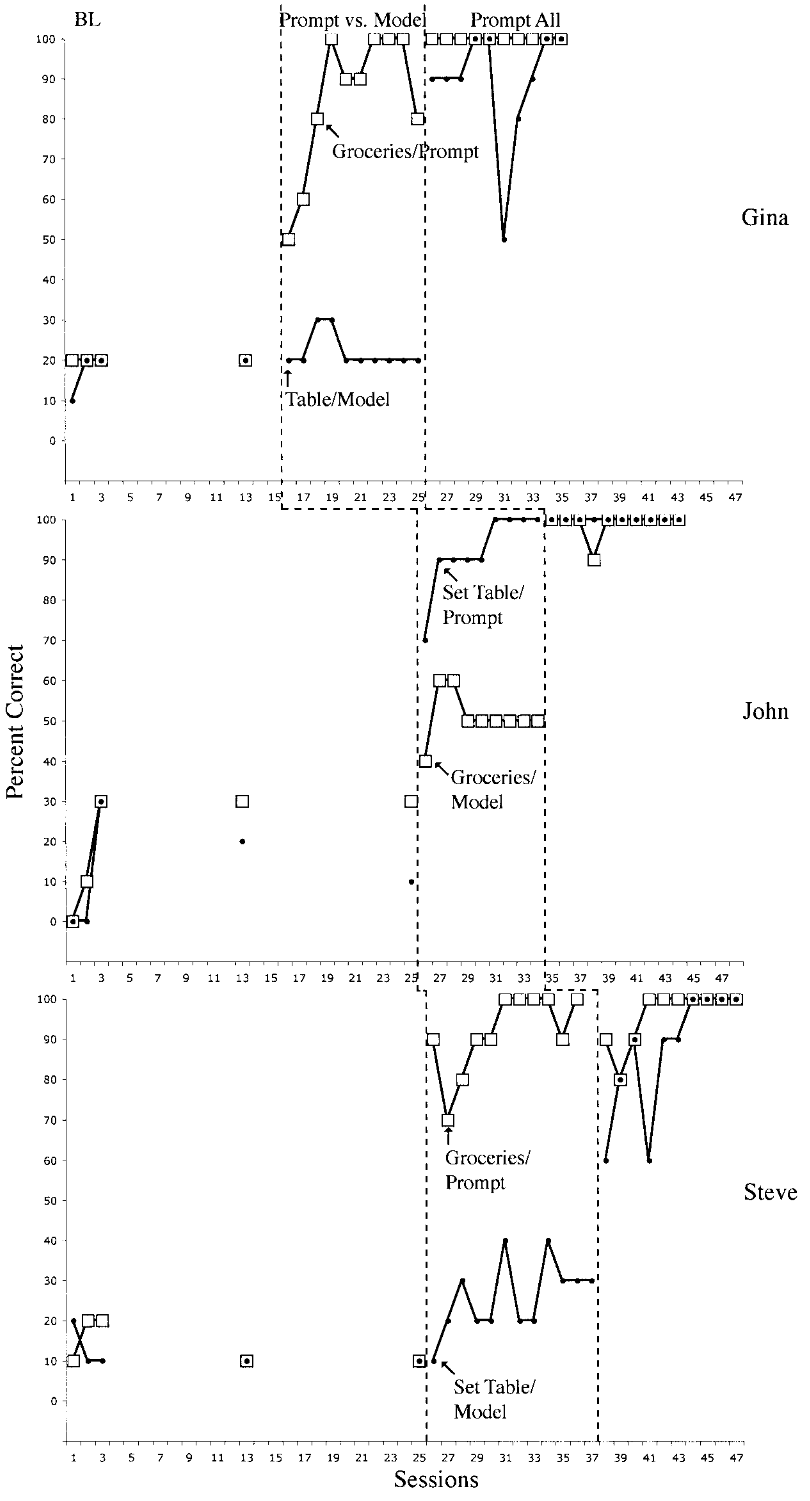

Figure 1b. Percentage of steps completed correctly across sessions and tasks for Gina, John, and Steve.

he failed to complete the step correctly after watching the video clip. Error correction consisted of verbal feedback (e.g., "No, that's not right, let's watch the video again."). The video clip for that step was then played a second time and Ron was given a second chance to complete the step. If he did it correctly, he was given verbal praise. If he did it incorrectly, the trainer completed the step and moved on to the next step.

Inter-observer Agreement

One of three independent observers collected data on the number of steps performed correctly during at least 55% of the sessions in all phases of the study (i.e., 67% of *Baseline*, 86% of *Prompt vs. Model*, and 55% of the *Prompt All* sessions). Observers were graduate students in special education who were trained to collect data by showing them a data sheet, explaining what constituted a correct response, and showing them how to record data on the data sheet. Agreement between the trainer and the independent observer on the steps performed correctly was calculated on a session-by-session basis using the formula: Agreements/(Agreements + Disagreements) x 100%. The resulting percentages of agreement ranged from 90-100% with a mean of 99%.

Results

Figure 1 shows the percentage of steps completed correctly across tasks, participants, and sessions. Because of need to counterbalance tasks/procedures, the six participants were arranged into three pairs. The introduction of video prompting/modeling was staggered across the three pairs. The results will therefore be described for each pair of participants.

Jack and Ron

During their three baseline sessions, Jack completed 10% of the steps in *Grocery* task correctly, but was not correct on any of the steps in the *Table Setting* task. Ron did not complete any steps correctly for either of the two tasks. Given their low and stable performance across 3 baseline sessions, Jack and Ron were the first to progress to the next phase of the study in which video prompting and video modeling were compared. Jack showed rapid acquisition of the *Grocery* task with video prompting, but did not show any improvement on setting the table with video modeling. Ron showed improvement with *Table Setting* with the video prompting, but showed no gains in the *Grocery* task with video modeling. When *Table Setting* was shifted to video prompting in the final phase, Jack quickly acquired this task and maintained performance on the *Grocery* task. Ron reached criterion (i.e., 100% correct over 2 of 3 successive sessions) when the *Grocery* task was shifted from video modeling to video prompting, while his performance on setting the table remained in the 40–70% correct range. Because Ron showed a consistent pattern of errors in relation to the placement of utensils, the error correction procedure was added to the *Table Setting* task beginning with Session 29. Despite the use of video prompting as an error correction procedure, Ron's performance on the *Table Setting* task did not increase beyond 70% correct.

Kurt and Gina

During baseline, Kurt correctly completed 0–30% of the steps in *Grocery* task and 10–20% of the steps in the *Table Setting* task analysis. Gina's performance ranged from 10–20% correct on both tasks. Given their stable performance during baseline, Kurt and Gina were the next to receive training using video prompting and video modeling. Kurt showed rapid acquisition of the *Table Setting* task with video prompting, but his performance on putting away groceries, which was taught with video modeling, stabilized at 30–40% correct. Gina reached acquisition on the *Grocery* task with video prompting, but showed no gains in the *Table Setting* task with video modeling. When the *Grocery* task was shifted to video prompting in the final phase, Kurt quickly acquired this task and also maintained 100% on the *Table Setting* task. Gina also reached criterion when the *Table Setting* task was shifted from video modeling to video prompting, while her performance on putting away groceries maintained at 100% correct.

John and Steve

During baseline, John performance stabilized at 30% correct or less on both tasks, whereas

Steve's performance stabilized at 10% correct. When video prompting/modeling was introduced, John showed rapid acquisition of the *Table Setting* task with video prompting, while his performance on putting away groceries, which was taught with video modeling, stabilized at 50% correct. Steve reached acquisition on the *Grocery* task with video prompting, and showed slight improvement to 30–40% correct on the *Table Setting* task, which was taught with video modeling. Both John and Steve reached 100% correct on the *Grocery* and *Table Setting* tasks when these were respectively shifted to video prompting. At the same time, both maintained 100% correct on the task that was initially acquired with video prompting (i.e., *Table Setting* for John; *Grocery* for Steve).

Discussion

Video prompting was more effective than video modeling for teaching two daily living tasks to six adults with developmental disabilities. The superiority of video prompting was evident for all participants and for both the *Table Setting* and *Grocery* task. Indeed, while video prompting was shown to be generally effective in promoting acquisition across both tasks, video modeling was shown to be generally ineffective. These results do not appear to reflect differences in either the participants or the tasks because the two video training procedures were counter-balanced across both tasks and participants. In addition, the two tasks appeared to be of comparable difficulty and were equated in terms of number of steps.

Our results are consistent with previous studies in which video prompting has been successfully applied in teaching individuals with developmental disabilities (Graves et al., 2005; Grice & Blampied, 1994; Sigafoos et al., in press; Sigafoos et al., 2006; Tiong et al., 1992). Because there are relatively few such studies, our present findings provide much-needed further confirmation that video prompting can be an effective tool for teaching individuals with developmental disabilities. Importantly, our findings also extend the literature on video prompting by systematically replicating the effects across six adults and two daily living tasks. Because the video prompting procedure was effective in promoting acquisition of the skills required to complete both tasks correctly, the participants gained important independent living skills. The skill gains would seem to have considerable ecological validity (Ford & Gaylord-Ross, 1991) in that the tasks were functional, age-appropriate, represented habilitative priorities, and because the procedures were implemented in the actual settings in which these skills were required.

However, while the results are consistent with previous studies on video prompting, these data are difficult to reconcile with the numerous studies that have demonstrated consistently positive effects with video modeling (Charlop & Milstein, 1989; Charlop-Christy & Johneshvar, 2003; D'Ateno et al., 2003; Kinney, Vedra, & Stromer, 2003; Nikopoulos & Keenan, 2003; Rehfeldt et al., 2003; Shimada et al., 1998; Shipley-Benamou et al., 2002; Wert & Neisworth, 2003). Indeed, given the weight of evidence, video modeling must be seen as a "well-validated behavioral intervention" (Corbett, 2003, p. 88). Why then was video modeling generally ineffective in the present study, while video prompting was, for the most part, associated with fairly rapid skill acquisition?

There are several plausible explanations for the results we obtained in this study. First, video prompting may have been more effective because participants only had to watch a relatively brief video clip prior to attempting each step of the task. With video modeling, in contrast, participants had to watch a longer duration video that showed the entire task before getting an opportunity to complete the task. Video modeling would therefore seem more demanding in terms of attentional and retentional processes. Bandura's (1986) research on observational learning suggests that (a) attention to the model, and (b) retention in memory of observed events are necessary for efficient learning. Because individuals with developmental disabilities are known to have attention and memory deficits (Matson & Smiroldo, 1999), they might be expected to learn faster with instructional procedures that have fewer attentional and retentional demands.

Anecdotally, participants in the present study did seem to attend more closely to the brief clips that were used with the video prompting procedure. Indeed, they appeared to watch each clip for its entire duration and often performed the step exactly as demonstrated in the video clip, suggesting they were able to remember how to do the step after watching the video clip. During video modeling, in contrast, participants often seemed distracted and frequently looked away from the computer screen as the video was being shown. Our video modeling procedure might have been more effective if participants had been prompted and reinforced for watching the entire video. Indeed, direct prompting and reinforcement for attending is often included as part of the instructional package when using video modeling (e.g., Charlop-Christy et al., 2000; Rehfeldt et al., 2003).

Another variable that may account for the results of the present study is the differences in perspective of the video clips. Specifically, the clips used in video prompting involved a subjective viewpoint in that they were filmed from the perspective of the person performing the task (Norman et al., 2001; Shipley-Benamou et al., 2002). In contrast, the clips used in video modeling were filmed from the viewpoint of a spectator watching one of the authors complete the task. Thus, it is possible that video prompting was more effective because participants saw each step of the task being completed from their own perspective. Unfortunately, the design of the present study does not permit us to determine whether this variable influenced the results. However, data from a recently completed study (Reed, 2005) showed no difference in acquisition when video prompts were filmed from the perspective of the person performing the task or from the viewpoint of a spectator watching one of the authors complete the task. Still, future research should therefore investigate the role of perspective on the efficacy of video-based instruction.

Another possibility to consider in interpreting the results of the present study is that there might have been something about the experimental design that biased the results to favor video prompting. Two participants (Kurt and John) might have been biased in favor of video prompting because of their prior experience with video prompting in a previous study on teaching dish washing (Sigafoos et al., 2006). While this bias is a possible limitation, the remaining four adults all performed better with video prompting and none of these adults had any prior experience with either video prompting or video modeling.

The manner in which the video clips had to be shown might also have been biased the results in favor video prompting. Recall that with video prompting, the participants received 10 opportunities (one per step) during each session. With video modeling, in contrast, participants had only one (2 min) opportunity per session to complete the task. While this 2 min limit seemed more than sufficient, in that none of the participants ever need more than 2 min to complete the task, it is possible that the unequal number of opportunities influenced the results. While this is a limitation of the study, it was not possible to equate the video prompting and video modeling procedures in terms of number of discrete opportunities provided within a session.

Multiple treatment interference (Shapiro, Kazdin, & McGonigle, 1982) might also have influenced the results. While the alternating treatments design controlled for order and sequence effects, concurrent exposure to video prompting may have interfered with the effectiveness of video modeling. This seems unlikely, however, because video modeling generally had little effect on behavior while video prompting tended to produce large and immediate effects. Multiple treatment interference is often evidenced by a lack of differential responding to the treatments being compared (McGonigle, Rojahn, Dixon, & Strain, 1987). If interference were operating, then less consistent and dramatic differences between the two procedures might have been expected. In addition, the two procedures were used on different tasks in different settings, which would likely reduce the likelihood of multiple treatment interference. Still, the study is limited because we did not ascertain whether or not video modeling would have been effective had it been used alone, rather than in comparison to video prompting.

Another limitation of the study is that Ron failed to reach criterion on the *Table Setting* task, even when video prompting was used as an error correction procedure. For all other tasks and participants in this study, video prompting and video modeling were used as antecedent prompts. That is, participants watched the video and then attempted the task. Other studies have found that video prompting can be effective when used as an error correction procedure (Le Grice & Blampied, 1994; Tiong et al., 1992). Le Grice and Blampied, for example, used video prompting as an error correction procedure in teaching four adults with mental retardation to operate a computer and video recorder. Participants were first verbally instructed to complete the task. Only if they failed to complete a step correctly within 5 s were they shown the relevant video prompt. With this procedure in place, participants acquired the targeted skills. Ron never reached 100% correct on the *Table Setting* task, even with the addition of video prompts to correct errors. One implication of Ron's failure is that some individuals may require other types of prompting procedure (e.g., gesture or physical prompts) if they fail to acquire a new skill with video prompting alone.

Although video prompting was shown to be more effective than video modeling in the present study, there are potential advantages to the use of video modeling, which may make it worth considering as an instructional procedure. For one, the videos used with the modeling procedure were easier to film because we did not have to make a separate video clip for each step of the task. In addition, during training, staff only had to play a single video (multi-step) clip on the computer, rather than having to show 10 separate video clips. This made it faster and easier for the trainer to use video modeling as compared to video prompting. One potential training sequence would be to start with video modeling, but use video prompting if progress was not sufficiently rapid. If video prompting also failed to promote acquisition, then additional prompting strategies could be added to the instructional package. An alternative training sequence would be to begin with video prompting and then fade the need for step-by-step prompting by merging each separate clip into larger chunks of video towards the goals of having to use only a single (multi-step) video clip. A recent study has shown that this approach to fading video prompts can be effective (Sigafoos et al., 2006). Future research should investigate the relative merits of these two sequencing options because the ultimate goal for some individuals may be to maintain correct performance without the need for continued prompting or modeling.

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