Teaching Leisure Skills to an Adult with Developmental Disabilities Using a Video Prompting Intervention Package

Jeffrey Michael Chan  
Northern Illinois University

Lindsay Lambdin  
Helping Hand Center

Toni Van Laarhoven and Jesse W. Johnson  
Northern Illinois University

Abstract: The current study used a video prompting plus least-to-most prompting treatment package to teach a 35-year-old Caucasian man with Down Syndrome three leisure skills. Each leisure skill was task analyzed and the researchers created brief videos depicting the completion of individual steps. Using a multiple probe across behaviors design, the video prompting intervention was introduced for painting a picture, listening to music, and taking a digital picture. In addition to video prompting, a least-to-most prompting strategy was used when the participant exhibited difficulty with completion of a step. Results indicate that the participant successfully completed steps of the leisure skills with the aid of video and instructional prompts.

Leisure skills and activities have long been identified as a priority for individuals with developmental disabilities (Dattilo & Schleien, 1994; Schleien, Porter, Wehman, 1979; Voeltz & Apfel, 1981). Leisure activities are important because of the positive, beneficial effects on social skills, communication abilities, and overall quality of life of participants (Felce & Perry, 1995, Garzia-Villamisar & Dattilo, 2011). Unfortunately, adults with disabilities engage in very few leisure activities despite frequent opportunities to do so. Zijlstra & Vlaskamp (2005) found that persons with severe disabilities, in a typical weekend, spent less than four hours in leisure activities, although as many as 19 hours were available for such activities.

Video prompting has been used as an effective method of instructing individuals with developmental disabilities to successfully complete a variety of behaviors, such as daily living skills (Cannella-Malone, Sigafoos, O’Reilly, Cannella, & Lancioni, 2007; Sigafoos et al., 2007; Van Laarhoven, Kraus, Karpman, Nizzi, & Valentino, 2010; Van Laarhoven & Van Laarhoven-Myers, 2005), cooking skills (Graves, Collins, Schuster, & Kleinert, 2005; Mechling, Gast, & Fields, 2008; Mechling, Gast, & Seid, 2009; Mechling & Gustafson, 2008; Mechling & Gustafson, 2009; Mechling & Stephens, 2009; Sigafoos et al., 2005; Van Laarhoven, Chandler, McNamara, & Zurita, 2009), purchasing skills (Cihak, Alberto, Taber-Doughty, & Gama, 2006; Mechling, Gast, & Barthold, 2003), pedestrian travel (Mechling & Seid, 2011), and vocational skills (Van Laarhoven, Johnson, Van Laarhoven-Myers, Grider, & Grider, 2009). In video prompting, individuals are shown brief videos that depict individual steps of the target behavior. The participant is shown a video, allowed to complete that step, and then shown the next video for the next step. The process continues until the participant has completed the target behavior. Positive findings across studies suggest that video prompting is an effective method to teach new skills to individuals with disabilities and a recent review of video prompting studies indicates that video prompting is also effective for facilitating generalization and maintenance of skills and may...
be more effective than pictures or video models (Banda, Dogoe, & Matuszny, 2011).

In some recent studies, researchers have taught leisure skills to individuals with developmental disabilities. These studies are unique in that the leisure activities have involved the use of digital devices. For example, Edrissinha, O’Reilly, Choi, Sigafoos, & Lancia (2011) used video prompting to teach four adults with developmental disabilities to take pictures with digital cameras, transfer the pictures to a computer, and print them. Video prompting was carried out using a laptop within a room at a day treatment program, and all four participants mastered the skills. Upon reaching criterion, the authors demonstrated that the behavior generalized to naturalistic settings (i.e., participants successfully took pictures outdoors).

Hammond, Whatley, Ayres, and Gast (2010) taught three middle school students with intellectual disabilities to use iPod Nanos to listen to music, watch movies, and take pictures. The authors utilized a video modeling approach, in which the entire target behavior is shown to the participant prior to attempting in the activity. Intervention sessions were conducted at the participants’ school and video modeling was conducted on a desktop computer. All three participants learned to use the iPods when video modeling was introduced. Similarly, Kagohara et al. (2011) used a video modeling procedure to teach three high school students with severe and multiple disabilities to listen to music on an iPod Touch. Video modeling took place with an iPod Touch in the participants’ special education classroom. The participants successfully learned to listen to music on the iPods with instruction and they were able to maintain the skill after the intervention had been discontinued.

The goal of the current study was to expand on the previous literature by teaching an adult with developmental disabilities to engage in leisure activities involving a digital entertainment device. The activities chosen for intervention were listening to music and taking digital pictures on an iPod Touch. The activities chosen as a target behavior. A video prompting intervention was implemented with an iPod Touch. It was hypothesized that the participant would successfully learn the leisure skills with video prompts in conjunction with a least-to-most prompting system.

Method

Participant

The participant was a 35-year-old man named Marvin. Marvin was diagnosed with Down Syndrome, moderate intellectual disabilities, and Type II diabetes. He was not taking medication at the time of the study. He attended a day treatment program for adults with developmental disabilities 4 days per week and also worked in a sheltered workshop one day per week. Marvin had difficulty with expressive language and spoke in brief, 2–3 word sentences. He lived with his mother in a single family home. Marvin required some assistance with self-care skills such as grooming and hygiene, and needed reminders to let staff know if he needed to use the restroom. He set water temperature independently, although he was not allowed to use the stove or microwave at home. He relied on his mother for cooking, shopping, money management, and transportation. Marvin washed his own laundry, although he balled them up and left them in a pile on the floor when finished. Marvin preferred to wear the same shirt every day, despite owning several. He became upset when he reminded to wear different shirts. Marvin was outgoing and enjoyed spending time with others; he often greeted others with a smile and handshake. At the time of the study, behavioral goals for Marvin included learning sign language (e.g., “bathroom,” “happy,” “mad,” “sick”), decreasing the length of his bathroom breaks (i.e., less than 10 minutes per trip), community safety skills, money identification, cooking skills, choosing healthy foods, and spelling simple words.

Target Behaviors

Three leisure skills were taught to Marvin: painting, listening to music, and taking a digital picture (see Table 1 for task analyses). Painting consisted of gathering painting materials, painting a small picture, and cleaning up materials. Listening to music consisted of listening to music on an iPod Touch using
headphones. Preferred music was identified from a review of the participant’s file. In this condition, the participant navigated the iPod to find the correct app and chose the desired song. Finally, taking a picture consisted of taking a picture with the iPod and viewing pictures in the iPod’s photo album.

Materials

A 3rd generation iPod Touch was used to show videos to the participant during video prompting. Videos were shown using the Picture Scheduler app, in which the user can present one video for each step of a task analysis. Videos were created on an iPhone 4 and edited using Sony Vegas on a Windows-based desktop computer.

For painting, each video started with an audio narration that described the step and then showed a staff member completing the step. For the listening to music and camera tasks, each video started with an audio narration that described the step and showed a large picture of the button or icon to be pressed by the participant. The video then showed an iPod being used from the perspective of the user (e.g., first person, point of view, or subjective model).

A 4th generation iPod Touch was used by the participant to listen to music and take pictures. The native iOS music app was used to listen to music. The Camera+ app was used to take digital pictures and the participant viewed pictures with the native iOS photo album.

Setting

The study took place at a day treatment program for adults with developmental disabilities in the suburbs of Chicago. The program had approximately 100 clients and included activities such as instruction in independent living skills, computer skills, cooking, art, music, and physical fitness. Housed within the same building were school programs for elementary and high school aged students.

Painting took place in the center’s art room, which was a large room that accommodated a dozen adults. Along the sides of the room were counters, cupboards, and a sink. Several large tables and chairs were placed in the center of the room. Listening to music and taking pictures took place in various small meeting rooms at the center. The meeting rooms each contained a large conference table and several chairs. Due to client privacy restrictions and seasonal weather conditions, picture taking could not occur in public or outdoor areas of the center.

Data Collection

Data on Marvin’s performance was collected by the instructor, who was an employee of the day program. The employee had a master’s degree and recently completed all graduate-level coursework required to become a Board

<table>
<thead>
<tr>
<th>TABLE 1</th>
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<tbody>
<tr>
<td>Task Analyses of Leisure Skills</td>
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<table>
<thead>
<tr>
<th>Painting</th>
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<tbody>
<tr>
<td>1. Put on apron</td>
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<tr>
<td>2. Get newspaper</td>
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<tr>
<td>3. Get paper towel and paintbrush</td>
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<tr>
<td>4. Get cup of water</td>
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<tr>
<td>5. Get paint and paper</td>
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<tr>
<td>6. Paint picture</td>
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<tr>
<td>7. Put painting on drying table</td>
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<tr>
<td>8. Put materials in sink</td>
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<tr>
<td>9. Throw away paper towel and recycle newspaper</td>
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<tr>
<td>10. Wash hands</td>
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<tr>
<td>11. Hang up apron</td>
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<tr>
<th>Listening to Music</th>
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<tbody>
<tr>
<td>1. Put on headphones</td>
</tr>
<tr>
<td>2. Unlock iPod (push home button and slide icon)</td>
</tr>
<tr>
<td>3. Tap “Music” icon</td>
</tr>
<tr>
<td>4. Find album and tap icon</td>
</tr>
<tr>
<td>5. Tap song</td>
</tr>
<tr>
<td>6. Tap “Pause” icon when done</td>
</tr>
<tr>
<td>7. Close app (push home button)</td>
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<tr>
<td>8. Take off headphones</td>
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<table>
<thead>
<tr>
<th>Taking Pictures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Unlock iPod (push home button and slide icon)</td>
</tr>
<tr>
<td>2. Tap “Camera” icon</td>
</tr>
<tr>
<td>3. Take pictures</td>
</tr>
<tr>
<td>4. Close app (push home button)</td>
</tr>
<tr>
<td>5. Tap “Photo” icon</td>
</tr>
<tr>
<td>6. Tap “Camera Roll”</td>
</tr>
<tr>
<td>7. Tap the picture you want to look at</td>
</tr>
<tr>
<td>8. Swipe through pictures to browse</td>
</tr>
<tr>
<td>9. Close app (push home button)</td>
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Certified Behavior Analyst. Each target behavior was task analyzed and broken into its component steps. Correct performance of a step was recorded if Marvin completed the entire step after viewing the video prompt. Marvin did not earn credit toward criterion for correct performance if he required a verbal, point, or physical prompt from the instructor, nor did he earn credit for partial completion of a step. Data collection was identical during the baseline and intervention phases.

**Experimental Design**

A multiple probe across behaviors design was used (Gast, Skouge, & Tawney, 1984). The study consisted of two phases: baseline and intervention. Baseline data were collected on all target behaviors at 1–2 times per week. After a stable baseline was recorded for the first behavior (i.e., painting), the video prompting plus least-to-most prompting intervention was introduced while the other two behaviors remained in baseline. Over time, intervention was introduced in a staggered fashion for the remaining target behaviors.

**Procedure**

**Baseline.** During the baseline phase, the instructor told the participant to complete the target behavior (e.g., “Paint a picture”). For each step of the behavior, Marvin was given 5 s to begin. If the participant completed a step correctly, he was free to begin the next step without a verbal instruction. If he did not begin the step or engaged in an incorrect behavior, the instructor completed the step for him. No feedback was given for correct or incorrect performance.

**Intervention.** During the intervention phase, video prompting was provided to the participant. Additionally, a least-to-most prompting procedure (Wolery & Gast, 1984) was implemented if the participant did not initiate the step after watching the video. In video prompting, a brief video was shown to the participant that depicted the step being completed. The iPod was operated by the instructor during the intervention. After he was shown the video, the participant was given 5 s to initiate the step. If the participant did not begin the step or began the incorrect behavior, he was interrupted and given a verbal reminder of what to do. If he still did not initiate the step within an additional 5 s, the instructor provided a point prompt. If the participant did not initiate the step following another 5 s, the instructor gently guided him through the step with a partial physical prompt. Upon completion of a step, the participant was allowed 5 s to begin the next step. If he initiated the step and was correct, he was allowed to continue without support. If he did not initiate the step, he was shown the next video. This procedure was used through the completion of the behavior.

**Inter-observer Agreement and Treatment Fidelity**

Inter-observer agreement (IOA) was collected during 50% of sessions. A second observer collected data on Marvin’s performance of the target behaviors. Agreement occurred if both the instructor and observer marked the same step of the behavior as either correct or incorrect. IOA was measured at 100% across all three target behaviors.

The instructor was assessed for accurate implementation of the intervention. An observer noted the instructor’s completion of components of the intervention (i.e., gaining the participant’s attention, showing the videos, allowing time to respond, systematically providing extra prompts, and ending the activity) during 46% of intervention sessions. Treatment fidelity was measured at 100%.

**Results**

During baseline for painting, Marvin showed near-zero levels of correct completion (see Figure 1). With introduction of the intervention, performance quickly improved within three sessions and remained stable throughout the remainder of the intervention phase. During baseline for listening to music, Marvin did not complete any steps correctly. His performance improved slightly at the start of the intervention phase, with the first three sessions indicating that Marvin performed 38% of steps correctly. Rapid progress began by the fourth session of intervention. By the 11th session, Marvin completed 100% of steps correctly. For taking pictures, Marvin did not demonstrate any correct performance during
Figure 1. Percentage of steps correct for painting, listening to music, and taking pictures.
the first four sessions of baseline. However, correct performance increased during sessions 5–8 of baseline, with a decreasing trend being observed during the final two sessions of the phase. With intervention, performance increased immediately to 77% of steps correct and Marvin reached 100% within four sessions.

Discussion

In the current study, an adult with Down Syndrome and intellectual disabilities was taught three leisure skills in a day treatment setting. Using a treatment package consisting of video prompting and least-to-most prompting, the participant was taught to paint pictures, listen to music on an iPod Touch, and take a digital picture with an iPod Touch.

These results expand the previous literature on leisure skill instruction for adults with developmental disabilities by using an iPod Touch to deliver video prompts. Because of their small size, iPods afford the instructor greater mobility than traditional laptop computers. This mobility may be useful in non-treatment settings, such as the community or places of employment, where tables and chairs may not be available to accommodate large pieces of equipment (Mechling, 2011).

These results also add to the literature on teaching individuals with disabilities to use iPods during leisure activities. Previous studies have taught these skills to students in school settings, whereas the current study was conducted with a 35-year-old adult. For adults, the need for leisure skill instruction is great, as it has been found that much of the free time of adults with disabilities is void of meaningful activity and they often lack the support to provide them with guidance in leisure activities (Zijlstra & Vlaskamp, 2005). Further, it is likely that Marvin benefitted from watching another person complete the step on video. Most frequently, verbal or point prompts were sufficient for completion of steps. If he required partial physical prompting during painting, for example, Marvin was usually just taken to the area of the room where the step occurred. Once he was in the correct spot, he was able to complete the rest of the step correctly.

There are several limitations with the current study. First, there is concern about experimental control. Marvin’s performance during the painting baseline, while extremely low during all four sessions, does show slight improvement over time. It should be noted, though, that his improvement during the painting baseline was on the independent performance of a single step of the task analysis. Upon introduction of the intervention, his correct performance reached 81% within three sessions. With this quick rise in performance, we are confident that the improvement was due to the intervention.

More problematic, however, is the improvement shown during baseline for taking pictures. Marvin did not perform any steps of

prompts to complete steps even though he had just watched the video prompt. Given the extended delay between the video and latter steps of the target behavior, it does not appear likely that Marvin would have benefitted from video modeling.

The current study used video prompting, along with verbal, point, and physical prompts, to teach the three target behaviors. Although the instructional prompts were not faded completely, Marvin independently completed many steps following the video prompting intervention. While it may be argued that the video prompting was unnecessary due to the fact that Marvin still needed to be prompted by the instructor, use of the videos was probably more efficient than having the instructor complete or model the steps in person. For example, it was more efficient to show a video of the adult gathering painting materials (paint, brushes, water, and paper) because had an in-person modeling strategy been used, the materials would have needed to be physically brought out, as well as cleaned up after the session. In a video prompting situation, though, no clean up was necessary.
taking pictures correctly until intervention began for listening to music. As performance in listening to music improved, so did performance in taking pictures. The data suggest that learning to use the iPod to listen to music led to response generalization of taking pictures. Both skills share common responses, such as unlocking the phone, selecting apps or items by tapping an icon, browsing through content by scrolling, and closing apps by pressing the “home” button. Given that Apple products are known for their ease of use (CNN, 2000), the occurrence of response generalization within the iOS environment is not surprising. However, response generalization is not necessarily a given, as the participants of Kagohara et al. (2011) were selected for participation specifically because they did not demonstrate generalization despite having previous experience with iPods.

Despite response generalization, Marvin did show a decline in performance as baseline for listening to music continued. It was decided that intervention should be introduced so that Marvin could increase his correct performance of the task. Upon introduction of the intervention, correct performance immediately increased to levels exceeding baseline, suggesting that the intervention had a positive effect on Marvin’s behavior.

Another limitation is that the least-to-most prompting system was not faded entirely. Despite consistent prompting, Marvin relied on help from the instructor throughout the entire study. As he gained more exposure to each skill, however, he independently initiated and completed more and more steps. There were often times that Marvin seamlessly moved from one step to the next and didn’t require the video prompt from the instructor. However, based on the results of this study, it cannot be determined if Marvin can be entirely independent in the leisure skills taught. It should be noted that Marvin requires help in almost all aspects of his daily life and receives daily support from staff and his caregiver. Complete independence during leisure activities, or any other daily living skills, may not be attainable for Marvin. This may be due to his level of intellectual functioning, a long history of prompt dependence, or both. Marvin’s need for frequent support should not disqualify him from instruction in leisure skills, though. Given enough time – more time than available in the current study – it may be possible for him to achieve complete independence. Although he requires small amounts of support, his life is enriched from learning several new leisure activities.

Although a formal social validity measure was not utilized in the current study, anecdotal evidence indicates that Marvin enjoyed painting and using the iPod. In particular, he frequently smiled and laughed when he had the opportunity to take pictures. He also appeared to enjoy looking at pictures on the iPod, and often browsed through old pictures stored on the device.

Future studies should continue to focus on teaching leisure skills to adults. Further, various electronic avenues need to be studied. For example, video prompting delivered via mobile devices that run on Apple iOS or Android should be studied further. Also, the usefulness of other video prompting apps should be examined. Another direction for leisure skills instruction may be instruction with other forms of visual supports, such as picture schedules (whether presented on paper or electronically).

Results of the current study suggest that video prompting plus least-to-most prompting may be an effective method for leisure skill instruction. Unplanned response generalization and concerns about experimental control prevent a firm conclusion about the effectiveness of the procedures, and further study is warranted. For adults with developmental disabilities who require support to complete daily tasks, video prompting may be a viable alternative to video modeling.

References


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