Review of Video Prompting Studies with Persons with Developmental Disabilities

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Abstract: We reviewed 18 video prompting studies that were conducted with persons with developmental disabilities. Results across the studies indicate that video prompting is a viable method for improving various domestic, vocational, and independent living skills. In addition, video prompting strategies facilitated maintenance and generalization of learned skills. Also, in several studies when teaching various skills, video promptings strategies were more effective than static pictures or video models alone. We discuss the results and make suggestions for future researchers and practitioners.

Use of prompts is one of the most important tools used in teaching students with disabilities, especially those with developmental disabilities (Wolery & Gast, 1984; Wolery, Gast, Kirk, & Schuster, 1988). Prompts are events that, when added to instruction, increase the chances that the student will make a correct response (Collins, 2007; Wolery, Ault, & Doyle, 1992). Prompting techniques are designed to facilitate acquisition of skills, minimize errors, and ensure correct responding. Prompts, therefore, help learners perform behaviors or skills they did not know and decrease the chances for errors. Prompts are either classified by the sensory modality (auditory, visual, and verbal) by which students receive the assistance or by the types of behaviors teachers engage in to provide assistance (Wolery et al.) and can be presented in any combination (Cooper, Heron, & Heward, 2007). Visual prompts have been found to be effective for individuals with developmental disabilities because they are more permanent and concrete than transient auditory prompts (Quill, 1997). Bryan and Gast (2000) suggested that visual prompts can be presented through a variety of means including photographs, texts, pictures/line drawings, and symbols.

Over the years, visual prompts have been presented through the use of texts or static pictures. In recent years however, video-based instructional procedures have been widely used to teach a range of adaptive skills and behaviors to individuals with developmental disabilities. Two types of video-based methods have been used in the literature for persons with developmental disabilities: video modeling and video prompting. In video modeling, the learner watches the video of a model performing the entire target skill or task prior to being provided the opportunity to perform the target task (Cannella-Malone et al., 2006). Video prompting on the other hand involves the learner watching each step or task in the chain and performing the step before advancing to the next task in the chain (Sigafoos et al., 2007). There is indication from the literature that video prompting might be more effective for some persons with developmental disabilities who have difficulty watching lengthy videos, as it does not require the same cognitive load (i.e., remembering the sequence of steps in the target behavior) as is...
necessary in video modeling for such students (Sigafoos et al.). Furthermore, literature on skill-based instruction indicates that persons with developmental disabilities acquire skills when tasks are presented in small increments, multiple opportunities are provided to perform the steps, and when using various prompting and fading strategies (see Giangreco, 2011; Snell, 2007). Thus, the video prompting strategy might be more useful for persons with moderate and severe developmental disabilities.

Several literature reviews have been conducted on video modeling studies with persons with autism and other developmental disabilities (see Baker, Lang, & O’Reilly, 2009; Bellini & Akullian, 2007; Delano, 2007; Coy & Hermarisen, 2007; Rayner, Denholm, & Sigafoos, 2009; Shukla-Mehta, Miller, & Callahan, 2010). Results across reviews overwhelmingly indicate that video modeling strategies are useful in teaching social, communication, and self-care skills for individuals with autism and other developmental disabilities. Since the 1990s there have been numerous studies conducted using the video prompting strategy to teach various skills to persons with developmental disabilities. However, no review has been found that specifically analyzed video prompting studies.

It is therefore important that practitioners and researchers have the current knowledge base about the video prompting strategy. Thus, we conducted the review of video prompting studies that were conducted with persons with developmental disabilities. Specifically, we answered the following questions in this study: (a) was video prompting an effective method for teaching skills to persons with developmental disabilities? (b) was the video prompting strategy more effective compared to other interventions? (c) were the skills learned through video prompting maintained in the absence of intervention? (d) were the skills learned through video prompting generalized across settings, persons, and/or behaviors? and, (e) what was the social validity of the video prompting strategy?

Method

We searched EBSCO databases which included PsychInfo, ERIC, Social Science Index, and Psychological Abstracts using the following terms: video and intervention, video prompting, video modeling, video instruction, developmental disabilities, intellectual disabilities, mental retardation, autism, technology, teaching strategies, and multimedia instruction. We selected studies that met the following criteria: (a) researchers implemented the video prompting intervention, (b) studies included at least one or more participants with developmental disabilities, and (c) published in a peer-reviewed journal between years 1990 and 2010. We also conducted an ancestral search for additional studies under the reference section of each study that we found. Overall, we selected 18 studies that met our criteria. We analyzed the selected studies on several variables including the demographics, target skills, designs, intervention effectiveness, maintenance, generalization, social validity, etc. Table 1 provides a detailed summary of the several variables that were analyzed.

Results

Participants

The 18 studies included 68 participants. All participants were diagnosed with intellectual disability/mental retardation ranging from mild to severe. A majority of participants were diagnosed with a moderate intellectual disability except for one who was diagnosed with severe intellectual disability (see Grice & Blampied, 1994). In addition, some participants were diagnosed with additional disabilities such as autism, ADHD, physical disabilities, Down Syndrome, Aspergers, behavior disorder, Tourette, seizures, and Williams Syndrome. Participants’ ages ranged from 8 years to 41 years, with an average age of 21.5 years.

Settings

Researchers have conducted studies in various settings, including: a special school for students with intellectual disabilities (Grice & Blampied, 1994); resource room/self-contained classrooms (Graves, Collins, Schuster, & Kleine, 2005; Norman, Collins, & Schuster, 2001); a conference room in a high school (Mechling, Gast, & Barthold, 2003); a home living room in a high school (Mechling, Gast,
<table>
<thead>
<tr>
<th>Author</th>
<th>Participants</th>
<th>Setting</th>
<th>Target Skill</th>
<th>Design</th>
<th>Mode of Presentation</th>
<th>Effective/Not Effective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cannella-Malone et al. (2006)</td>
<td>27 y</td>
<td>Mild ID, AUT</td>
<td>Kitchen of a vocational center</td>
<td>Putting away grocery</td>
<td>Computer</td>
<td>Yes for all</td>
</tr>
<tr>
<td></td>
<td>28 y</td>
<td>Mod. ID, AUT</td>
<td></td>
<td>Table setting</td>
<td></td>
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<tr>
<td></td>
<td>32 y</td>
<td>Mod. ID</td>
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<td></td>
<td>36 y</td>
<td>Asperger, Mod. ID</td>
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<td></td>
<td>36 y</td>
<td>Mild ID, AUT</td>
<td></td>
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<tr>
<td></td>
<td>41 y</td>
<td>Mod. ID, AUT</td>
<td></td>
<td></td>
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<tr>
<td>Cihak, et al. (2006)</td>
<td>11 y</td>
<td>Mod. ID</td>
<td>Classroom and grocery store</td>
<td>Using debit card to withdraw money from ATM to buy items</td>
<td>5-ft, 8-in. screen projected from an Epson Powerlite S1</td>
<td>Yes, as effective as using static picture</td>
</tr>
<tr>
<td></td>
<td>12 y</td>
<td>Mod. ID</td>
<td></td>
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<td></td>
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<tr>
<td></td>
<td>12 y</td>
<td>Mod. ID</td>
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<tr>
<td></td>
<td>12 y</td>
<td>Mod. ID</td>
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<tr>
<td></td>
<td>12 y</td>
<td>Mild. ID</td>
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<tr>
<td></td>
<td>11 y</td>
<td>Mod. ID</td>
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<tr>
<td>Goodson et al. (2007)</td>
<td>33 y</td>
<td>AUT, Mod. MR</td>
<td>Dining area of vocational center</td>
<td>Setting table</td>
<td>Computer</td>
<td>1 subject reached criterion with VP alone. All reached criterion with VP plus error correction</td>
</tr>
<tr>
<td></td>
<td>36 y</td>
<td>Mod. MR</td>
<td></td>
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<tr>
<td></td>
<td>36 y</td>
<td>AUT, Mild MR</td>
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<tr>
<td></td>
<td>34 y</td>
<td>AUT, Mod. MR</td>
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<tr>
<td>Graves et al. (2005)</td>
<td>16 y</td>
<td>Mod. ID</td>
<td>Kitchen area of classroom</td>
<td>Cooking</td>
<td>VCR, TV</td>
<td>Yes, 2 of 3 target skills</td>
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<tr>
<td></td>
<td>18 y</td>
<td>Mod. ID</td>
<td></td>
<td>Multiple probe across Behaviors</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>20 y</td>
<td>Mod. ID</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Horn et al. (2008)</td>
<td>29 y</td>
<td>MR, A</td>
<td>Laundry room in a group home</td>
<td>Laundry skills</td>
<td></td>
<td>Yes, 2 participants with VP Third participant with VP + least to most prompt</td>
</tr>
<tr>
<td></td>
<td>17 y</td>
<td>DD, ADHD</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>25 y</td>
<td>MR, AUT, Behavior Disorder</td>
<td></td>
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<tr>
<td>Author</td>
<td>Participants</td>
<td>Mode of Presentation</td>
<td>Effective/Not Effective</td>
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<tr>
<td>Le Grice &amp; Blampied (1994)</td>
<td>13 y Mod. ID, 13 y Sev. ID, 15 y Mod. ID, 18 y Mod. ID</td>
<td>Television</td>
<td>Yes for All</td>
<td></td>
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<tr>
<td>Mechling et al. (2003)</td>
<td>16 y 1m Mod. ID, Tourette, 17 y 11m Mod. ID, Phy. Dis, 18 y 7m Mod. ID</td>
<td>Computer</td>
<td>Yes for all</td>
<td></td>
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<tr>
<td>Mechling et al. (2008)</td>
<td>19 y Mod. ID, 20 y 2m Mod. ID, DS, 22 y 3m Mod. ID</td>
<td>Computer</td>
<td>Yes for all</td>
<td></td>
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</tr>
<tr>
<td>Mechling et al. (2009)</td>
<td>16 y 4m Mild ID, AUT, 17 y 4m Mod. ID, AUT, 17 y 10m Mod. ID, AUT</td>
<td>Personal Digital Assistant (PDA)</td>
<td>Yes</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mechling &amp; Gustafson (2008)</td>
<td>17 y 8m Mod. AUT, 17 y 10m Mild. AUT, 21 y 1m Mod. AUT, 16 y 3m Mod. AUT, 15 y 10m Mod. AUT, 16 y 8m Mod. AUT</td>
<td>Portable DVD player</td>
<td>Video prompting was more effective compared to static pictures for all 6 participants</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Mechling &amp; Gustafson (2009)</td>
<td>18 y 7m Mod. ID, AD/HD, Seizure, 20 y 5m Mod. ID, DS, 22 y 8m Mod. ID, 21 y 2m Mod. ID, 19 y 3m Mod. ID, 22 y 6m Mod. ID, AD/HD</td>
<td>Portable DVD player</td>
<td>Video prompting was more effective compared to static pictures for all 6 participants</td>
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<tr>
<td>Author</td>
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<tr>
<td>Mechling &amp; Stephens (2009)</td>
<td>20y 10m, 19y 9m, 19y 11m, 22y 6m</td>
<td>Apartment</td>
<td>Cooking-related tasks</td>
<td>Adapted alternating treatment</td>
<td>Portable DVD player</td>
<td>Video prompting was more effective compared to picture-based cookbooks for all 4 participants</td>
</tr>
<tr>
<td>Norman et al. (2001)</td>
<td>8y 1m, 9y 8m, 12y 3m</td>
<td>Classroom</td>
<td>Self-help skills</td>
<td>Multiple-probe across behaviors and participants</td>
<td>TV–VCR Combo</td>
<td>Two of 3 participants learned three tasks and the third one two tasks</td>
</tr>
<tr>
<td>Sigafoos et al. (2005)</td>
<td>34 y, 36 y, 36 y</td>
<td>Kitchen of a vocational center</td>
<td>Making a bag of popcorn in Microwave</td>
<td>Delayed multiple probe A-B-A-follow-up</td>
<td>Computer</td>
<td>Yes for 2 of 3</td>
</tr>
<tr>
<td>Sigafoos et al. (2007)</td>
<td>27 y, 28 y, 33 y</td>
<td>Kitchen of a vocational center</td>
<td>Dishwashing</td>
<td>Multiple baseline across participants</td>
<td>Portable computer</td>
<td>Yes for All</td>
</tr>
<tr>
<td>Tiong et al. (1992)</td>
<td>21 y, 26 y, 30 y</td>
<td>Bedroom &amp; hallway of a group home</td>
<td>Exiting skills in case of fire</td>
<td>Multiple probe</td>
<td>Monitor</td>
<td>Yes for all</td>
</tr>
<tr>
<td>Van Laarthoven et al. (2009)</td>
<td>17 y</td>
<td>Animal shelter</td>
<td>Job-related tasks (e.g., cleaning, mopping, emptying garbage)</td>
<td>Multiple probe across tasks</td>
<td>Video iPod</td>
<td>Yes for all three tasks</td>
</tr>
<tr>
<td>Van Laarthoven &amp; Van Laarthoven-Myers (2006)</td>
<td>18y, 17y to 19y, 17y to 19y</td>
<td>Home classroom</td>
<td>Domestic skills</td>
<td>Adapted alternating treatment</td>
<td>Computer</td>
<td>For 2 of 3 participants video rehearsal plus video prompting more effective</td>
</tr>
</tbody>
</table>

AD/HD = attention deficit/hyperactivity disorder; AUT = Autism; DS = Down Syndrome; ID = intellectual disability; Mod = Moderate, MR = mental retardation; Phy. Dis. = physical disability.
& Seid, 2009; Mechling & Gustafson, 2008); a resource room and grocery store (Cihak, Alberto, Taber-Doughty, & Gama, 2006); a community house (Tiong, Blampied, & le Grice, 1992); the laundry room in a group home (Horn et al., 2008); the kitchen of a vocational training center (Cannella-Malone et al., 2006; Goodson, Sigafoos, O’ Reilly, Cannella, & Lanciali, 2007; Sigafoos et al., 2007; Sigafoos et al., 2005); an apartment kitchen (Mechling, Gast, & Fields, 2008; Mechling & Gustafson, 2009; Mechling & Stephens, 2009); and an animal shelter (Van Laarhoven, Johnson, Van Laarhoven-Myers, Gridier, & Gridier, 2009). Overall, most studies were conducted in kitchen or home living settings because they involved cooking-related tasks.

**Designs**

Researchers in the majority of the studies used a multiple baseline/multiple-probe design across behaviors/participants (Graves et al., 2005; Horn et al., 2008; Mechling et al., 2003; Mechling et al., 2008; Mechling et al., 2009; Norman et al., 2001; Tiong et al., 1992; Van Laarhoven et al., 2009). However, in some studies a multiple-baseline design was combined with an alternating treatment or ABAB design: ABAB combined with multiple-baseline across participants (Goodson et al., 2007; Sigafoos et al., 2007; Sigafoos et al., 2005); a multiple-probe across participants with an alternating treatment design (Cannella-Malone et al., 2006). An adapted alternating treatments design was used in five studies (Cihak et al., 2006; Mechling & Gustafson, 2008, 2009; Mechling & Stephens, 2009; Van Laarhoven & Van Laarhoven-Myers, 2006). In one study an AB design was replicated across participants (Grice & Blampied, 1994).

**Targeted Skills**

Researchers in several studies (n = 7) targeted food preparation or cooking-related skills (Graves et al., 2005; Mechling et al., 2008; Mechling et al., 2009; Mechling & Gustafson, 2008, 2009; Mechling & Stephens, 2009; Sigafoos et al., 2005) and in one study cooking tasks (such as microwaving pizza) were combined with other tasks such as washing a table and folding laundry (Van Laarhoven & Van Laarhoven-Myers, 2006). Investigators targeted self-help skills and/or other daily living skills in a number of studies, such as: purchasing and banking skills (Cihak et al., 2006; Mechling et al., 2003), table setting (Goodson et al., 2007), setting the table and putting away groceries (Cannella-Malone et al., 2006), doing laundry (Horn et al., 2008), dish washing (Sigafoos et al., 2007), cleaning sunglasses, putting on a wristwatch, and zipping a jacket (Norman et al., 2001). In a few of the studies investigators targeted other skills, such as operating video and computer devices (Grice & Blampied, 1994); job-related tasks including cleaning a bathroom, mopping floors, taking out garbage, and cleaning kennels at an animal shelter (Van Laarhoven et al., 2009); and safely exiting bedrooms in the event of fire (Tiong et al., 1992). Overall, a majority of the tasks involved cooking and self-care/independent living skills.

**Video Prompting Material**

*Types of video prompts.* The video prompts were mainly consistent across the studies. Video prompts were prepared either from the participant’s viewpoint or spectator’s viewpoint. A majority of the videos were prepared from the spectators’ viewpoint with verbal or voice-over instructions (Goodson et al., 2007; Grice & Blampied, 1994; Mechling et al., 2009; Mechling & Gustafson, 2008, 2009; Mechling & Stephens, 2009; Tiong et al., 1992; Van Laarhoven et al., 2009). In one study, the investigators mentioned that the videos were prepared from the spectators’ viewpoint (Van Laarhoven & Van Laarhoven-Myers, 2006); however, they did not mention whether any verbal instructions were used in the video prompt. Researchers in several other studies used video prompts from the participants’ viewpoint or with other combinations, including: participants’ viewpoint with voice-over instructions (Cannella-Malone et al., 2006; Graves et al., 2005; Sigafoos et al., 2005, 2007; Sigafoos et al., 2005) participants’ viewpoint with voice-over instructions and text display (Norman et al., 2001), participant’s viewpoint (Horn et al., 2008), and participants’ and spectators’ viewpoint with voice-over instructions (Mechling et al., 2008).
Length of video clips. Researchers in 8 of 18 studies described the length of video clips. Prompt lengths varied: 4 s (Cihak et al., 2006), 4 to 12 s (Sigafoos et al., 2005), 4 to 30 s (Sigafoos et al., 2007), 9 to 13 s (Goodson et al., 2007), 10 to 15 s (Grice & Blampied, 1994), 12 to 42 s (Cannella-Malone et al., 2006), and 12 to 25 s (Mechling & Gustafson, 2008, 2009). The average length could not be determined because only ranges were provided in these studies.

Mode of Presentation

A majority of the videos were presented on laptop computers (Cannella-Malone et al., 2006; Goodson et al., 2007; Horn et al., 2008; Sigafoos et al., 2007; Sigafoos et al., 2005; Van Laarhoven & Van Laarhoven-Myers, 2006). However, in one study a computer with a touch screen program was used (Mechling et al., 2003). Televisions were used to present the tasks in 4 of the 18 studies (Graves et al., 2005; Grice & Blampied, 1994; Norman et al., 2001; Tiong et al., 1992) and in three other studies a portable DVD player was used (Mechling et al., 2008; Mechling & Gustafson, 2008; Mechling & Stephens, 2009). Researchers in two studies presented the videos on small devices such as personal digital assistant (PDA; Mechling et al., 2009) or a video iPod (Van Laarhoven et al., 2009). Finally, the video prompts were presented on the screen in one study (Cihak et al., 2006).

Effectiveness of the Strategy

Overwhelmingly, the video prompting strategy, sometimes combined with other prompting or error correction strategies, has enhanced various skills in the majority of participants (n = 67; 99%) with developmental disabilities. However, one of three participants in Sigafoos et al. (2005) did not acquire the targeted skill. Sigafoos and colleagues taught three adults with developmental disabilities to use a microwave oven to make popcorn. Results showed that two of three participants learned to make the popcorn and was on anti-depressant medication. Also, in another study Graves et al. (2005) reported that the three participants in their study learned two of three cooking tasks (i.e., stovetop, microwave, countertop cooking skills) with the video prompting strategy. The authors mentioned that due to the end of the school year they did not have sufficient time to collect data for the third task.

Video Prompting Combined with Other Strategies

Researchers in several studies combined the video prompting with strategies such as constant time delay (CTD), video feedback, and/or error correction methods. For example, Goodson et al. (2007) used the video prompting strategy to train three adults with developmental disabilities to teach a domestic skill (table setting). The authors combined video prompting with an error correction strategy. During the error correction strategy, the investigators replayed the step on the video. If the participant still could not perform the step of the task after viewing the video clip, the researchers demonstrated through in vivo (live model) modeling. Results indicated that the participants were able to learn the table setting tasks with 90% or more accuracy when video prompting was combined with error correction than with video prompting alone. Similarly, Van Laarhoven et al. (2009) played videos on an iPod combined with an error correction strategy (video feedback) to teach three job-related tasks (i.e., cleaning a bathroom, mopping floors and taking out garbage, and cleaning kennels) to a 17-year-old person with a developmental disability. The participant was able to learn all three tasks quickly, required fewer prompts as the study progressed, and was able to operate the iPod independently.

In quite a few studies least-to-most prompting methods were implemented. For example, Tiong et al. (1992) trained four adults with intellectual disabilities in fire safety using the video prompting strategy. The authors also used various levels of prompting (least to most prompting) to train the participants in different scenarios in case of fire. Initially, the investigators read out a description of a scenario and asked the participants “What would you
do?” If the participant did not respond, the trainer provided a non-specific verbal prompt. If the participant still did not respond to a verbal prompt, he was shown a video of the step then was asked to perform the step. Results indicated that all four participants acquired the tasks and were able to perform the tasks in transfer settings. Furthermore, the level and number of prompts decreased at the end of the intervention. Similarly, Mechling et al. (2009) used the least-to-most prompting method (i.e., picture-prompt, picture + auditory prompt, and video prompt + voice over) to train three adults with autism in cooking skills using a personal digital assistant (PDA). Results showed that the PDAs with video, picture, and auditory prompts were effective as they served as a self-prompting method to improve participants’ cooking skills. Authors indicated that the self-prompting device may serve a dual purpose; an antecedent prompting as well as permanent prompting system. Also, Horn et al. (2008) taught three adults with developmental disabilities laundry skills. Two of three participants acquired the skills with the video prompting procedure alone. However, one of the participants acquired the skill when the investigators added least-to-most prompting along with video prompting. Results were idiosyncratic across participants. Likewise, Cihak et al. (2006) compared video prompting with static picture prompting with two groups of three students with intellectual disabilities to teach purchasing and banking skills. The investigators provided instruction in groups using the least-to-most prompt procedure. Results indicated that both the video prompting and the static picture prompting were equally effective across participants.

Norman et al. (2001) used video modeling and video prompting combined with CTD to teach self-help skills to three children with intellectual disabilities. Initially, the entire task was presented to the participants through video modeling and later the participants were shown each step through video prompting combined with time delay. Results indicated that two participants learned all three tasks (cleaning sunglasses, putting on a wrist-watch, and zipping a jacket) and the third participant learned two of three tasks (cleaning sunglasses and zipping a jacket). Similarly, Graves et al. (2005) initially showed the entire task of the video model and later showed video clips of each task combined with the CTD procedure with three students with developmental disabilities. Results indicated that all three participants successfully learned two of three cooking tasks. Likewise, Mechling et al. (2003) used video-based instruction (video modeling, video prompting, and still photographs) to teach debit card use with three adults with moderate intellectual disabilities. The authors combined video prompting with CTD. All three participants acquired the skills and learned to use the debit card in the community and novel stores.

Video Prompting and Fading
Prompt dependency is one of the main concerns when teaching persons with developmental disabilities. Thus, decreasing prompts is an important part of instruction to enhance independence. Results show that researchers in several studies have attempted to reduce prompts or directly withdrew the intervention to see the effects of the video prompting strategy. In a study, Sigafoos et al. (2007) explicitly faded video prompting when teaching three adults with developmental disabilities dish washing skills. Initially, the authors showed the video clips individually and asked the participants to perform the task. Subsequently, more steps were added to each video clip until all of the steps of the task had been combined into a single video clip. At the end of the study, video prompting was removed. Results indicated that the participants were able to learn the task and maintain at 1, 2, and 3 months. In another study, Sigafoos et al. (2005) taught three adults with developmental disabilities to make popcorn in the microwave with the video prompting strategy. Participants were able to retain the skills following the withdrawal of the intervention which showed that fading was not required. In another study that involved domestic skills (washing a table, microwaving pizza, and folding laundry), Van Laarhoven and Van Laarhoven-Myers (2006) showed that the students were able to fade the video prompts on their own and move to picture prompts. Finally, Mechling et al. (2008) investigated the effects of the video prompting strategy in which the participants operated a portable DVD player.
to learn three cooking tasks. Results indicated that all participants learned to operate the DVD player and were able to correctly perform the steps of the cooking tasks.

Video Prompting versus Other Interventions

Researchers in 6 of 18 studies compared video prompting with other picture/video-based interventions (Cannella-Malone et al., 2006; Cihak et al., 2006; Mechling & Gustafson, 2008, 2009; Mechling & Stephens, 2009; Van Laarhoven & Van Laarhoven-Myers, 2006). For example, Van Laarhoven and Van Laarhoven-Myers compared three video-based strategies (video rehearsal, video rehearsal plus photos, and video rehearsal and in-vivo video prompting) to teach daily living skills with three young adults with developmental disabilities. Results showed that the video rehearsal combined with video prompting was more effective with two participants when compared to the two other conditions (video modeling and video modeling plus photos). For one participant, the video modeling plus photo condition was effective to increase task acquisition. In another study, Cannella-Malone and colleagues compared video modeling and video prompting strategies with six adults with developmental disabilities. The investigators trained the adults to set the table and put away groceries. Results indicated that video prompting was more effective than video modeling in teaching both tasks; table setting and putting away groceries.

Researchers in four studies compared video prompting versus static pictures (Cihak et al., 2006; Mechling & Gustafson, 2008, 2009; Mechling & Stephens, 2009). Mechling and Gustafson trained six adults with autism in cooking-related tasks. The investigators compared the video prompting and static pictures using an adapted alternating treatment design. Results indicated that all participants acquired the skills faster in the video prompting method compared to the static pictures during the intervention phase of the study. Also, in another study Mechling and Gustafson compared the video prompting and static picture prompting while training six adults in cooking-related tasks. Results showed that the video prompting strategy was more effective than the static picture prompting across all of the participants. Likewise, Mechling and Stephens compared the video instruction as a self-prompting strategy and static picture-based cookbooks to train four students with moderate intellectual disabilities in cooking-related tasks. Results indicated that the video self-prompting strategy was more effective than the picture-based cookbook across all four participants. However, in one study the video prompting and static pictures were equally effective with the participants. Cihak et al. investigated the effects of the video prompting versus static picture prompting with two groups of three students with intellectual disabilities to teach purchasing and banking skills (withdrawing money from ATM and purchasing). The authors used group instructional procedures (model and test) and also provided community based instruction using a least-to-most prompt procedure. Results indicated that both the video prompting and the static picture prompting were equally effective. Overall, results of 5 of 6 studies showed that video prompting methods were more effective than the static picture interventions.

Maintenance and Generalization Data

Investigators in 7 of 18 studies reported maintenance data but did not report the generalization data (Cihak et al., 2006; Graves et al., 2005; Horn et al., 2008; Mechling et al., 2009; Sigafoos et al., 2007; Sigafoos et al., 2005; Van Laarhoven et al., 2009). Participants in Cihak et al. study maintained the purchasing skills learned through video prompting and static picture prompting strategies. Similarly, Sigafoos et al. collected maintenance data in their study which was conducted with three adults with developmental disabilities to teach them to microwave popcorn. Two of three participants successfully learned the skill and maintained it at 2, 6, and 10 weeks after the intervention. In another study, Sigafoos et al. trained three adults with developmental disabilities to do dish washing and maintenance data showed that they were able to perform the skill at 1, 2, and 3 month probes. Also, Mechling et al. assessed for maintenance of cooking skills using video-based instruction delivered on PDA with three individuals with autism. All three students maintained the skill.
following the intervention. Likewise, Graves et al. collected maintenance data with the participants after they reached criterion during the intervention. Results indicated that all participants learned the cooking tasks and maintained at least one or two tasks two weeks following the intervention. Results from Horn et al. also indicated that two of three participants in the study maintained the learned skills (laundry) two weeks following the intervention. Van Laarhoven et al. trained an adult with developmental disability using video iPod as a prompting design to complete three job related tasks (cleaning bathroom, mopping floors and taking out garbage, cleaning kennels) at an animal shelter. The participant quickly acquired the skills and required few prompts. Maintenance data indicated that the participant was able to perform the task without video iPod prompt at 10 weeks following the intervention.

Investigators in one study reported generalization data but no maintenance data (Grice & Blampied, 1994). Le Grice and Blampied trained four individuals with intellectual disabilities to operate video equipment and the computer using the video prompting strategy. All four participants learned the skill and generalized to novel video players and computer equipment.

Investigators in 4 of 18 studies reported both maintenance and generalization data (Mechling et al., 2003; Norman et al., 2001; Tiong et al., 1992; Van Laarhoven et al., 2009; Van Laarhoven & Van Laarhoven-Myers, 2006). Van Laarhoven and Van Larhoven-Myers collected post intervention and generalization data. The three participants were able to perform the steps (microwave pizza) in novel instructional settings and post intervention data indicated that participants were able to maintain the tasks. Also, Mechling et al. trained three adults with intellectual disabilities to make purchases using a debit card. Maintenance data were collected for two of three participants 1 week and 6 weeks following instruction. Maintenance data showed both participants were able to make purchases. In addition, all three participants generalized the debit card use in community and novel stores. Similarly, Norman et al. taught self-help skills to three children with developmental disabilities (cleaning sunglasses, putting on a wristwatch, and zipping a jacket) using the video modeling and video prompting strategies combined with CTD. Results showed that all three participants learned the skill and maintained the skill; however, maintenance probes ranged between 1 to 13 weeks across three participants. For the task of cleaning glasses, the investigators assessed for generalization across persons with two participants and also assessed for generalization of putting on wristwatch with one of the participants across material. No generalization probes were conducted with the third participant. Finally, Tiong et al. assessed both generalization and maintenance of fire safety skills with four adults with intellectual disabilities using the video prompting strategy. Results indicated that the participants were able to transfer the training to a novel setting and maintain the skills 4–5 weeks post intervention.

Social Validity

Social validity was assessed in 4 of 18 studies (Mechling et al., 2009; Tiong et al., 1992; Van Laarhoven et al., 2009; Van Laarhoven & Van Laarhoven-Myers, 2006). In a study, Tiong et al. trained participants with intellectual disabilities to escape from the bedroom in the event of fire. The authors used a questionnaire to assess the satisfaction of the staff and the participants. Results indicated that the staff expressed medium level of satisfaction and the participants expressed high level of satisfaction. However, the staff also expressed concerns about the video quality and indicated that the training program was boring and two of the participants indicated that they were more concerned about the fire safety. Similarly, Van Laarhoven et al. conducted social validity assessments through informal interviews with the study participant, his mother, and the employers about the video iPod and video feed back intervention. The participant indicated that he liked the video iPod and he felt that the device helped him to do tasks independently. In addition, the mother and the employers expressed satisfaction with the results and were impressed with the effectiveness of the video iPod. The employers indicated that they thought the video iPod would benefit other employers when training new employees in their setting. Also,
Van Laarhoven and Van Laarhoven-Myers assessed the social validity of intervention with parents who indicated that they were satisfied with the way the participants acquired the steps with the strategy. In addition, two participants stated that they enjoyed watching the videos on the computer and one participant stated that she would have preferred watching on the television. Finally, Mechling and colleagues assessed social validity by asking the participants about their preference by presenting a portable DVD player, PDA, and picture cookbook. The study was conducted using PDAs to deliver video-based instruction. Two participants preferred the portable DVD player and the third participant preferred the PDA.

Discussion

Results of this review show that video prompting is a viable intervention for teaching individuals with a range of developmental disabilities for various domestic, life, vocational, and independent living skills. Results of several studies also show that the video prompting strategy is more effective when compared to static picture use. Furthermore, participants in several studies maintained the skills learned through video prompting and generalized the learned skills to novel settings or behaviors.

The video prompting strategy is a robust method for enhancing several skills in persons with developmental disabilities. There may be several possible reasons for its success. The method is based on task analysis, prompting, repetition, and feedback which are fundamental principles of teaching and are likely to increase skill acquisition in persons with developmental disabilities (Giangreco, 2011; Snell, 2007). In addition, video prompting involves consistency through video clips which can be repeatedly presented to participants at an individual pace until they are proficient. Furthermore, video clip information can be presented to learners in multiple modes including auditory, visual, and animated cues (Mechling et al., 2008). Research also supports that repeated practice is likely to enhance skill acquisition (Ayres & Langone, 2005; Giangreco, 2011) and because many studies involved participants with autism, it is likely that persons with autism, are especially likely to respond to visual mode of presentations (Quill, 1997).

This review indicates that video prompting was predominantly used with cooking-related, vocational, and/or domestic skills with young adults or adults with developmental disabilities. Although few studies have attempted other skills, such as purchasing and safety, none of the studies attempted to teach social skills or self-help skills such as dressing, grooming, brushing, shaving, etc. It is possible that the complex nature of social skills requires a combination of variables (e.g., initiate, respond, terminate conversations, share) and that students may be better able to respond to other interventions such as direct teaching, peer modeling, and video modeling. However, the question for future researchers that remains is whether video prompts can be used to teach social or self-help skills in persons with developmental disabilities. In addition, more studies are needed with preschool-age and/or young children with developmental disabilities.

Researchers in several studies combined video prompting with CTD and used least-to-most prompting and/or video feedback as error correction methods to teach tasks. Research supports the use of such strategies to teach chained tasks in persons with developmental disabilities (see Dogoe & Banda, 2009; Wolery et al., 1992). Several studies also show that video prompting along with least-to-most prompting was effective in teaching various skills. Future researchers should investigate if other prompting methods, such as graduated guidance with video prompting, improve skills in persons with developmental disabilities (see Sigafoos et al., 2005). In addition, it remains to be verified whether video feedback is an effective way to correct participants’ errors during video instruction (Van Laarhoven et al., 2009).

Investigators in several studies used multiple interventions such as video prompting combined with video modeling, video prompts with voice-over instructions and/or text display, static pictures, etc. Although package interventions seem to be effective with the participants, the individual effectiveness of each variable is difficult to assess in many of the studies. Future researchers should investigate the individual effects of each intervention such as video prompts with
and without voice over instructions or video prompting with or without text display, etc. (see Mechling et al., 2003).

Results show that few studies have attempted to fade the video prompts. An exemplary model developed by Sigafoos et al. (2007) can be replicated. In addition, it should be worth examining whether video prompts can be faded to picture prompts and, later, to verbal prompts which are natural. Also, researchers in few studies successfully trained the participants in using hand-held devices such as PDA or video iPod to deliver video prompts (Mechling et al., 2009; Van Laarhoven et al., 2009). Training persons with developmental disabilities to operate video devices on their own is likely to decrease the need for prompts and likely to improve independent functioning.

This study indicates that only 5 of 18 studies have assessed for generalization. The importance of generalization is very essential when skills are taught to persons with developmental disabilities because they have difficulties generalizing tasks across behaviors, settings, and/or persons. Thus, it is important for future researchers to incorporate generalization training using various strategies (e.g., multiple exemplars, using natural contexts, varying stimuli) and to assess for generalization when video prompting studies are conducted.

Although video prompting is an appealing intervention, in only 4 of 18 studies was social validity assessed. Thus, it is difficult to conclude whether video prompting interventions are easy to develop, easy to implement, and feasible in applied settings. Similar concerns appear in other studies (see Grice & Blamiped, 1994; Van Laarhoven et al., 2009). It is essential for practitioners to select a functional skill, task analyze the skill, video tape the sequence, edit, consider whether to use prompts, operate a video device (e.g., DVD, iPod, PDA), collect data, monitor, and assess for maintenance and generalization. Also, some tasks may involve too many steps and it may be cumbersome to present each step to the participant as a video prompt (e.g., having 30 or more steps in a complex cooking skill). Future investigators should include such social validity components of video prompting interventions or the strategy may not sustain in practitioner community.

Conclusions

This review supports the findings that persons with developmental disabilities can learn various domestic and independent living skills through the video prompting strategy. Video prompts appear to be more effective when compared to picture prompts. The strategy is also effective in the maintenance and generalization of learned skills. Because of the robust research findings, it is important for future researchers to continually assess social validity and make it more accessible for teachers and practitioners working with persons with developmental disabilities.

References


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