Comparing the Effects of Video Prompting with and without Error Correction on Skill Acquisition for Students with Intellectual Disability

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Abstract: This study used an iPod Touch to compare the effects of video prompting with and without error correction on the acquisition of two daily living skills across three students with moderate to profound intellectual disability and an extremely limited daily living skills repertoire. An adapted alternating treatments design within a multiple probe across participants design was used to demonstrate that the inclusion of error correction from the outset of intervention increased the efficiency of skill acquisition for at least one task for two students. For the third student, some skill acquisition was observed using video prompting both with and without error correction, but more stable responding was achieved using in vivo instruction.

Many individuals with intellectual disability experience deficits in daily living skills (e.g., Jacobson & Ackerman, 1990; Kraijer, 2000), which may have negative effects on their quality of life (Parmenter, 1994) and limit independent functioning in their natural environments. The ability for individuals with intellectual disability to acquire desired living and working opportunities may be unattainable until they can independently complete a variety of daily living skills (Heller, Bigge, & Allgood, 2005).

One method of teaching daily living skills to individuals with intellectual disability is the use of video prompting, which has been used to teach such skills as cooking (Graves, Collins, Schuster, & Kleinhart, 2005), shopping (Van Laarhoven, Johnson, Van Laarhoven-Myers, Grider, & Grider, 2009), and household chores (e.g., Cannella-Malone et al., 2006; Van Laarhoven & Van Laarhoven-Meyers, 2007). When teaching with video prompting, a participant watches one step of a task and then has the opportunity to complete that step before the next task step is shown. For example, Sigafos et al. (2005) used video prompting to teach three adults with developmental disabilities to use a microwave oven to make popcorn. Following intervention, two of the three participants were able to use a microwave to make popcorn without the video prompt and maintained the skill for at least 10 weeks.

Although video prompting appears to be a promising instructional technology, much of the research on video prompting indicates desktop or laptop computers are used as the prompting device. A few studies have successfully investigated the effects of using handheld devices to teach individuals with intellectual disability, but the small number of such studies limits the generalization of their results, and the authors noted that further investigation is required (e.g., Cihak, Kessler, & Alberto, 2008; Davies, Stock, & Wehmeyer, 2002a, 2002b, 2004). For example, Mechling, Gast, and Seid (2009) used a personal digital assistant (PDA) with picture, auditory, and video prompts to teach cooking skills to students with autism spectrum disorders. Portable technologies (e.g., PDAs, iPads, iPod Touches) have the potential to provide individuals with a device they can use across their daily environments and with a variety of skills. The increased accessibility provided with por-
Video aids may lead to greater competence and independence.

In the last several years, researchers in special education have started to investigate using the iPod Touch as a means of presenting video prompts. For example, Van Laarhoven and her colleagues (2009) successfully taught a young man with moderate developmental disabilities to use an iPod Touch to independently navigate video prompts in order to complete a vocational task at his job site using video prompting paired with error correction. One advantage of using an iPod Touch over other devices is that they can be loaded with a wide variety of applications across a range of topics (e.g., educational, communication, entertainment), so individuals with disabilities could be taught to use the device for numerous purposes. Additionally, they are portable and are ubiquitous in our society, which keeps their cost reasonable and may make them a feasible purchase for schools.

In addition to exploring the use of portable devices such as the iPod Touch, one area requiring further research is the use of error correction during instruction using video prompting. The purpose of error correction is to provide individuals with direct and explicit feedback to prevent future errors from occurring. Within the video prompting literature, two error correction procedures have been employed (Goodson, Sigafos, O’Reilly, Cannella, & Lancioni, 2007; Van Laarhoven et al., 2009). In one procedure, video prompting is used alone—without error correction—until a participant demonstrates a plateau in skill acquisition, at which point error correction is introduced. For example, Goodson et al. (2007) attempted to teach four adults with developmental disabilities to set a table using video prompting. When only one adult learned the skill with video prompting alone, an error correction procedure was implemented with the remaining three adults, resulting in skill acquisition. With this procedure, if an adult made an error, they were told it was incorrect and watched the video a second time. If the adult responded incorrectly a second time, the experimenter completed the step and instructed the adult to watch the completion of the step. This procedure was repeated with all incorrectly completed steps.

In the second error-correction procedure, error correction is provided from the outset of intervention, rather than following a plateau in skill acquisition. For example, Van Laarhoven et al. (2009) successfully used video prompting with error correction to teach job-related tasks to a young man with developmental disabilities. They used similar error correction procedures as those of Goodson et al. (2007), but error correction was provided with the participant’s first error after intervention was started, rather than waiting for his performance to plateau.

Although providing error correction following a plateau in skill acquisition (Goodson et al., 2007) and providing error correction from the outset of intervention (Van Laarhoven et al., 2009) both appear to be effective, the question remains whether one method will lead to more efficient skill acquisition. Additionally, using a handheld device such as an iPod Touch to present the video prompts requires further exploration. As such, the purpose of this study was to examine the following research questions: (a) Can individuals with moderate to profound intellectual disability acquire daily living skills using video prompting presented on an iPod Touch? and (b) Is video prompting with error correction provided from the outset of intervention more effective or efficient at teaching daily living skills than video prompting with error correction added when skill acquisition plateaus?

Method

Participants

Three adolescent students with moderate to profound intellectual disability were selected for participation because they (a) could perform few daily living skills (see Vineland age-equivalents in Table 1), (b) had specific educational goals related to daily living skills, and (c) were recommended by their educational teams. Participants’ vision and hearing were within the normal range.

Matt was a 15-year-old male with a profound intellectual disability and Noonan syndrome. He had no systematic form of communication, and his teacher reported that he was very passive (i.e., requiring high levels of physical prompting to complete tasks), did not attend well to instructions or activities, rarely initi-
ated interactions with others in his environment, and would throw or push items away with which he did not wish to engage. Matt could follow one-step instructions, select between “more” and “finished” when presented with a two button switch, hold writing utensils, throw things in the garbage, feed himself and wipe his mouth when finished, and request to use the restroom. In addition to daily living skills, his Individualized Education Program (IEP) goals included navigating to and entering a predetermined location, selecting the correct item from an array when instructed by his teacher, assisting with setting up an activity, and participating in an activity for at least 10 min.

Ann was a 15-year-old female with a moderate intellectual disability, Trisomy X syndrome, and mild cerebral palsy. She spoke in two- to three-word utterances and engaged in echolalia. She had poor balance as a result of the cerebral palsy, but could complete various gross motor skills. Her teacher reported that she could follow one-step directions, select between “more” and “finished” when presented with a two button switch, sort and verbally label colors, remain on task for more than 5 min, greet her peers and teachers, and feed herself. In addition to daily living skills, her IEP goals included shredding paper, following simple directions, sorting at least 24 items, presenting an identification card when asked, coloring within the lines of a drawing, and discriminating between two colors.

Mark was a 15-year-old male with a moderate intellectual disability and autism. He spoke in two- to three-word utterances, which were often echolalic in nature. His teacher reported that Mark required several verbal prompts to remain on task and would engage in challenging behavior (e.g., dropping to the floor, grabbing, pinching, eloping) to gain attention or access a tangible item. Mark could turn the pages in a book when it was read to him, follow one-step instructions, build with blocks, match colors, feed himself, wash his hands, dress himself, and request to use the restroom. In addition to daily living skills, his IEP goals included creating patterns, following a pattern, and expanding the length of his verbal utterances to four to five words.

### Setting

This study was conducted in an urban self-contained school serving students with moderate to profound intellectual and physical disabilities between the ages of 5 and 22. All three students were served in the same classroom with five other students. Sessions for table washing were conducted in the school cafeteria, which contained large rectangular tables and chairs. Students cleaned the table closest to the entrance of the cafeteria. Sessions for sweeping were conducted in the students’ classroom, which contained a large table with chairs (sitting on linoleum) and a rectangular carpet.

### Materials

Each student completed two tasks: sweeping with a manual sweeper (sweeping) and table washing. For the sweeping task, a Bissell manual sweeper was used, which “swept” debris into two dust compartments when moved forward and backward. Because this manual sweeper was used by the classroom staff only to clean visible debris—rather than for general cleaning purposes—small strips of paper (approximately 10 pieces) were placed on the carpet for the students to clean. For table washing, each student used one container of soapy water, one of clean water, one wash cloth, a roll of paper towels, and a garbage can. All materials for this task—except the garbage can—were placed on a rolling cart placed next to the table. The garbage can was placed next to the cart.

A second generation Apple iPod Touch was
used as the prompting device in this study. An auxiliary speaker (iMainGo 2 Handheld Speaker) was connected to the iPod Touch in order to increase the volume of the verbal instructions.

**Task Selection and Video Development**

The target tasks were identified by the students’ teachers and addressed specific daily living skill goals in their IEPs. Table washing and sweeping, were judged to be equivalent because the (a) number of steps needed to complete each task, (b) average duration of each clip, and (c) gross and fine motor movements in each task were either equivalent or very nearly so. The tasks did not include any common steps.

Because the students needed one-step, simple instructions, a task analysis was created with the aid of the teachers. For example, the task of wetting and wringing out a washcloth was broken down into picking up the washcloth, dipping it into the water, taking it out of the water, and wringing it out. Each of the final task analyses consisted of 16 steps (see Table 2).

The individual steps were filmed using a digital video camera and edited by the first author using iMovie (Apple Corp., 2009). Each step was videotaped from the perspective of a spectator, meaning that the students saw another person (i.e., an adult female) completing each step. At the beginning of each video clip, a verbal prompt was included that stated what the student was to do. For example, the video for the first step of sweeping started with the direction, “First, pick up the sweeper from the corner of the room.” This instruction was immediately fol-

**TABLE 2**

Task Analyses Including Video Duration

<table>
<thead>
<tr>
<th>Task Analysis</th>
<th>Sweeping Time (secs)</th>
<th>Washing the Time (secs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pick up sweeper from corner of room</td>
<td>6</td>
<td>Pick up wash cloth off of cart</td>
</tr>
<tr>
<td>Bring sweeper to the section of floor to be swept</td>
<td>9</td>
<td>Place wash cloth in container of soapy water</td>
</tr>
<tr>
<td>Put the sweeper on the floor in front of the pile</td>
<td>9</td>
<td>Take wash cloth out of soapy water</td>
</tr>
<tr>
<td>Lean handle backward and rotate hands</td>
<td>6</td>
<td>Squeeze wash cloth over container</td>
</tr>
<tr>
<td>Move sweeper backward and forward until the floor is clean</td>
<td>16</td>
<td>Bring wash cloth to the table</td>
</tr>
<tr>
<td>Walk to garbage can with sweeper</td>
<td>13</td>
<td>Wash table by moving wash cloth back and forth across entire table top</td>
</tr>
<tr>
<td>Turn sweeper upside down, holding over garbage can</td>
<td>10</td>
<td>Bring wash cloth back to cart</td>
</tr>
<tr>
<td>Open bottom tray door</td>
<td>7</td>
<td>Place wash cloth in container of clean water</td>
</tr>
<tr>
<td>Shake garbage into can</td>
<td>6</td>
<td>Take wash cloth out of clean water</td>
</tr>
<tr>
<td>Close bottom tray door</td>
<td>3</td>
<td>Squeeze wash cloth over container</td>
</tr>
<tr>
<td>Rotate sweeper</td>
<td>7</td>
<td>Place wash cloth back on cart</td>
</tr>
<tr>
<td>Open bottom tray door</td>
<td>7</td>
<td>Go to roll of paper towels</td>
</tr>
<tr>
<td>Shake garbage into can</td>
<td>6</td>
<td>Rip off two paper towels</td>
</tr>
<tr>
<td>Close bottom tray door</td>
<td>3</td>
<td>Bring paper towels to table</td>
</tr>
<tr>
<td>Turn sweeper right side up</td>
<td>7</td>
<td>Dry table by moving paper towels back and forth across entire table top</td>
</tr>
<tr>
<td>Put sweeper back in corner</td>
<td>12</td>
<td>Throw away paper towels in garbage can</td>
</tr>
</tbody>
</table>

Note: Average clip length was: table washing, 8.2 s (range 4.4–26 s, sum 127 s); sweeping, 8.3 s (range 3.8–16.5 s, sum 131 s).
lowed by the adult female model completing that step.

Once the videos were created and edited, they were uploaded to our developmental server so they could be added to the iPod Touch using the sync feature in iTunes. The video clips were then accessible using the video application already in the iPod Touch.

Dependent Variables

There were three dependent measures. The primary dependent measure was the percentage of steps completed correctly for each task. During baseline, a correct response was defined as completion of each step within 30 s of the initial instruction (e.g., “Wash the table.”) or within 30 s of the completion of the previous step. During intervention, a correct response was defined as completion of a step within 30 s (or 60 s) of the end of the video prompt. Two steps (i.e., “wash the entire table” and “sweep the carpet until clean”) took longer than 30 s to complete, so a correct response was scored if those steps were completed within 60 s.

Two secondary dependent measures included (a) the percentage of steps requiring error correction, and (b) the number of sessions required to reach criterion. The percentage of steps requiring error correction was defined as the number of steps per session requiring error correction divided by the total number of steps, then multiplied by 100. Mastery criteria were set at three consecutive sessions with 100% correct responding for each task, and the number of sessions to reach mastery was counted.

Data Collection

Data were collected on the percentage of steps completed correctly and the percentage of steps requiring error correction on a session-by-session basis. Sessions were conducted individually with each student and schedules were determined by their daily activities. Each student received instruction at least three, with a maximum of eight, times per week. Typically, only one session was conducted per day.

Experimental Design

This study used an adapted alternating treatments design (Wolery, Bailey, & Sugai, 1988) within a multiple-probe across participants design (Horner & Baer, 1978) to demonstrate a functional relation between the intervention and subsequent changes in behavior. The adapted alternating treatments design was used to examine the effects of the two independent variables (i.e., video prompting with or without error correction) on the acquisition of the two skills. The multiple-probe across participants design was used to replicate the findings across multiple participants.

Interobserver Agreement and Procedural Integrity

Interobserver agreement (IOA) data were collected by independent observers during 30%, 25%, and 32% of all phases for Matt, Ann, and Mark, respectively. Independent observers were trained by the first author, who explained the task analysis for each task, provided the observer with data sheets and explained how to complete them, and provided examples of correct and incorrect responses. IOA was calculated on a session-by-session basis by dividing the number of agreements by the number of agreements plus disagreements and multiplying by 100. IOA was 99% (range 94–100%) for Matt, 99% (range 90–100%) for Ann, and 99% (range 94–100%) for Mark.

Procedural integrity data were collected by independent observers during an average of 29% (range 25–32%) of the sessions for all students across all phases. The procedures for each session were listed sequentially on a checklist and a secondary observer marked off which steps were completed correctly or incorrectly. Procedural integrity was calculated by dividing the number of steps completed correctly by the total number of steps and multiplying by 100. Mean procedural integrity was 99% (range 90–100%) for all students.

Procedure

Baseline. During baseline, students were individually brought to the area where the task was to be performed and told to complete the task. For example, a student was taken to the table to be washed and told to “Wash the...
table.” During the session, the trainer recorded the number of steps the student completed correctly using single opportunity response probes (Snell & Brown, 2006). If the student did not initiate the first step of the task within 30 s or complete subsequent steps within 30 s of a previous step, the session was terminated. At the end of each session, the student was given noncontingent access to a choice of reinforcer.

**Video prompting without error correction (sweeping).** Students completed the sweeping task using video prompting without error correction. When using video prompting, the iPod Touch was held by the trainer so as to be both easily operated by the trainer and easily viewed by the student. The students did not operate the iPod Touch. Once the student was attending to the screen, the trainer said: “Watch this.” The trainer then started the first video clip. When the video clip ended, the trainer said: “Now you do it.” If the student failed to correctly complete the step within 30 (or 60) s, the trainer completed—or corrected—the step as unobtrusively as possible and proceeded to show the next clip using the same procedures as the first step. Students were only expected to complete one step at a time. No additional instructions, feedback, or prompts were delivered. At the completion of each session, the students were given noncontingent access to a choice of reinforcer.

**Video prompting with error correction (table washing).** Students completed the table washing task using video prompting with error correction. In this condition, procedures were identical to the video prompting without error correction condition except error correction procedures were implemented if the student began a step incorrectly or did not complete a step correctly within 30 (or 60) s of watching the video. Error correction consisted, of interrupting the student if the step was attempted incorrectly saying: “Sorry, [name], that’s not quite right. Watch this.” The video clip was then shown a second time. When the video clip ended, the trainer said: “Now you do it.” The student was then given another 30 (or 60) s to complete the step.

If the second viewing of the video clip did not evoke a correct response, three hierarchical least-to-most prompts were provided. The first prompt was a model, in which the trainer instructed the student to: “Watch me,” then completed the step correctly. If the student failed to show progress after three sessions using modeling, verbal direction was added, in which the trainer repeated the auditory prompt given in the video while modeling the correct response. Finally, if the student still was not performing a particular step after three sessions, full physical prompting was added. When using physical prompting, the experimenter repeated the auditory prompt given in the video while physically guiding the student to complete the step. All error correction decisions were made on a step-by-step basis. In other words, if a student was unsuccessful with one step in the entire task, only that step received the tiered error correction.

**Video prompting with error correction for both tasks.** Once video prompting with error correction was shown to be more effective, it was added to the sweeping task. The procedures used were identical to those in the video prompting with error correction condition used for table washing.

**In vivo instruction.** If the data for video prompting with error correction plateaued below mastery levels, in vivo instruction was implemented. A most-to-least prompting procedure was used in which a verbal direction was provided for each step, and the student was given 10 s to initiate a correct response. If the student did not initiate a response or began to respond incorrectly, a physical prompt was used to complete the step. After three sessions with the physical prompt, this was faded to a gestural prompt. Finally, the verbal prompt given to initiate each step was faded as the student began to chain steps of the task together.

**Results**

**Matt**

Percent correct data for Matt are presented in the top panel of Figure 1 and the percent of steps with error correction in the top panel of Figure 2. During baseline, Matt did not initiate any steps for either sweeping or table washing. When video prompting with and without error correction were implemented, performance with both tasks steadily increased and the error correction prompts used with table
Figure 1. Percent correct responding across sweeping (video prompting only) and table washing (video prompting with error correction) for Matt, Ann, and Mark.
Figure 2. Percent of steps with error correction for Matt, Ann, and Mark.
washing steadily decreased. In session 91, performance of table washing (using video prompting with error correction) continued to increase, but performance of the sweeping task (using video prompting without error correction) plateaued. When comparing video prompting without error correction to video prompting with error correction, Matt performed an average of 41.5% (range 13–56%) of the sweeping steps correctly with video prompting alone and 41.4% (range 0–69%) of the table washing steps correctly with video prompting plus error correction. When error correction was added to the sweeping task, his performance decreased slightly, completing an average of 34% (range 19–44%) steps correctly, and the number of error correction prompts needed for the table washing task also increased with this changed condition. When both the table washing and sweeping tasks were moved to in vivo instruction, his performance on both tasks increased; he completed an average of 55.6% (range 38–75%) of the sweeping steps correctly and an average of 65.9% (range 56–75%) of the table-washing steps correctly. Matt did not meet mastery for either task prior to the termination of this study, as noted in Table 3.

Percent correct data for Ann are presented in the second panel of Figure 1 and the percent of steps with error correction in the second panel of Figure 2. During baseline, of the steps initiated, Ann completed 25% correctly for sweeping and an average of 16% (range 6–19%) correctly for table washing. When video prompting was implemented (either with or without error correction), both tasks showed a stable increase, but table washing (using video prompting with error correction) was completed more successfully than sweeping (using video prompting without error correction) beginning in session 15. Additionally, the percentage of steps requiring error correction for table washing steadily decreased over the course of the intervention. When video prompting was used without error correction for the sweeping task, Ann performed an average of 51.8% (range 31–63%) of the steps correctly. When error correction was added to sweeping, she performed an average of 66.2% (range 50–81%) of the steps correctly and demonstrated a stable decrease in the percentage of steps requiring error correction in the first 15 sessions, though this stabilized af-

### Table 3

<table>
<thead>
<tr>
<th>Student</th>
<th>Task</th>
<th>Sweeping Without Error Correction</th>
<th>Sweeping With Error Correction (additional sessions)</th>
<th>Table Washing With Error Correction</th>
<th>In Vivo (additional sessions, task)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matt</td>
<td>Criterion met (Number of Sessions)</td>
<td>Not met (46)</td>
<td>Not met (17)</td>
<td>Not met (61)</td>
<td>Not met (28, Sweeping)</td>
</tr>
<tr>
<td></td>
<td>Percent Correct in Last Session</td>
<td>44%</td>
<td>38%</td>
<td>69%</td>
<td>Table Washing: 63%</td>
</tr>
<tr>
<td>Ann</td>
<td>Criterion met (Number of Sessions)</td>
<td>Not met (20)</td>
<td>Not met (24)</td>
<td>Met (33)</td>
<td>n/a</td>
</tr>
<tr>
<td></td>
<td>Percent Correct in Last Session</td>
<td>56%</td>
<td>75%</td>
<td>100%</td>
<td>n/a</td>
</tr>
<tr>
<td>Mark</td>
<td>Criterion met (Number of Sessions)</td>
<td>Not met (15)</td>
<td>Not met (30)</td>
<td>Met (32)</td>
<td>Met (21, Sweeping)</td>
</tr>
<tr>
<td></td>
<td>Percent Correct in Last Session</td>
<td>25%</td>
<td>69%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
ter the 15th session. With table washing (which always used error correction), she performed an average of 81.7% (range 31–100%) of steps correctly, with the final five sessions maintained at 100% correct responding. The number of sessions Ann needed to reach mastery is presented in Table 3. Ann did not meet criterion with the sweeping task (though ended her last session completing 75% of the steps correctly) and met mastery with table washing in 33 sessions.

**Mark**

Overall percent correct data for Mark are presented in the bottom panel of Figure 1 and the percent of steps with error correction in the bottom panel of Figure 2. During baseline, of the steps he initiated, Mark completed an average of 0.6% (range 0–6) correctly for sweeping and an average of 1.4% (range 0–13%) correctly for table washing. When the intervention was introduced, there was a clear differentiation between video prompting with and without error correction, with video prompting with error correction showing a steeper increase. When video prompting with error correction was introduced with table washing, Mark completed an average of 66.1% (range 6–100%) of the steps correctly, and completed the final three sessions with 100% accuracy. He also had a stable decrease in the percentage of steps requiring error correction. Conversely, when video prompting without error correction was introduced with sweeping, Mark completed an average of 17.6% (range 6–25%) of the steps correctly. When error correction was added, his performance improved, but plateaued between 69 and 75% (\(M = 57.8\%\), range 25–75%). The decrease in the percentage of steps requiring error correction also decreased at a fairly slow rate. Finally, when in vivo instruction was implemented with sweeping, he reached mastery and ended this phase with three sessions at 100% correct responding (\(M = 87.8\%\), range 75–100%).

The number of sessions Mark needed to reach mastery is presented in Table 3. Mark did not meet criterion with the sweeping task using video prompting with or without error correction across 45 sessions (ending the video prompting with error correction condition completing 69% of sweeping steps correctly), but did master the skill with in vivo instruction after an additional 21 sessions. He met mastery with table washing in 32 sessions.

**Discussion**

In this study, an iPod Touch was used to compare the effects of video prompting with and without error correction across two tasks and three individuals with moderate to profound intellectual disability. All students improved their performance over baseline levels, but only Ann and Mark met mastery using video prompting with error correction for table washing. Additionally, skill acquisition was slightly more efficient when error correction was included with the video prompts from the onset of intervention for two of the three students. For Matt, the inclusion of error correction with video prompting had a minimal effect, and in vivo instruction was used to increase his correct responding with both skills. All three participants attended to the iPod Touch and did not appear to have any trouble viewing the video prompts on the small screen.

One possible reason that video prompting without error correction was less effective for all three participants was the lack of feedback on the accuracy of their performance. For example, both Matt and Ann consistently made the same error for certain steps in the sweeping task, yet during the video prompting without error correction phase, neither received any corrective feedback and continued practicing this error. It is possible that the use of the error correction procedures would have remedied this problem, by providing opportunities for students to emit the correct response following the viewing of the video clip, thus enhancing the stimulus control the video prompt has on correct responding (Wordsell et al., 2005).

Video prompting (with and without error correction) was the least effective for Matt. Anecdotally, it was noted that several of the steps in each task were physically challenging for him to complete. For example, he consistently struggled with washing and drying the entire table, squeezing the cloth, sweeping the carpet until it was clean, turning the sweeper over, shaking the dirt out of the sweeper, and...
opening the tray door on the sweeper. All of the
tasks he struggled with were more physically
demanding and required either high levels of gross (e.g., wash entire table) or fine (e.g., open tray door) motor movements. Of the three students, Matt had the most significant physical disabilities and had an extremely limited daily living skills repertoire. For individuals who have intellectual disability, the types of skills being taught and the requirements of the responses affect the acquisition of new skills (Mechling & Gustafson, 2009). Thus, it is likely that the skill requirements of the two tasks influenced his results. On the other hand, although he did not master the tasks, he made substantial progress.

Although all students made progress with the sweeping task using video prompting without error correction, the fact that none of them reached criterion with this task, even after the error correction procedures were implemented, suggests that including error correction from the outset of intervention is more effective. Sigafoos, O’Reilly, and Lancerini (2010) indicate that individuals with significant disabilities generally take longer to learn new skills, suggesting that educators should focus their energy on teaching skills correctly from the beginning of instruction.

Because error correction with sweeping was not added until performance of the target behavior plateaued, the students were not able to practice the correct responses for the steps, and, in some cases, actually practiced incorrect responses. One could argue that unlearning incorrect behavior decreases learning efficiency, resulting in the need for a more intensive teaching strategy (i.e., in vivo instruction, which both Matt and Mark needed). Therefore, using error correction from the outset is likely to limit the errors a student might make, thereby decreasing the likelihood of practicing incorrect responses and potentially increasing the efficiency of instruction.

Even though results of this study were positive, there are several limitations to consider when interpreting these data. First, although efforts were made to identify equivalent tasks, it appears from the data that sweeping was more difficult than table washing. Additionally, because we did not counterbalance the two conditions (e.g., two participants completing table washing with video prompting with error correction and sweeping with video prompting alone and the third participant completing table washing with video prompting alone and sweeping with video prompting with error correction), there was no additional control in place to address potential differences in task difficulty. It is possible that video prompting alone could have led to mastery with the table washing task. Future research could address this issue by conducting a more thorough equivalency analysis and/or by counterbalancing the conditions.

Related to the first limitation, it was noted after the study was underway that several of the steps in the task analyses had been broken down into components that were too small. For example, in the table washing task, putting the cloth into the water, taking the cloth out of the water, and squeezing the cloth were presented as three separate steps. As we observed our students completing these steps, it became clear that these steps would have been better presented as one step, which would have been more natural and practical. Future researchers should test their task analyses for both completeness and practicality as this may impact skill acquisition and task equivalence.

A third limitation is the manner in which the baseline probes were conducted. In this study, participants were only given a single opportunity to respond correctly (Snell & Brown, 2006). In other words, as soon as they missed a step or stopped responding, that baseline session was terminated. In other studies examining video prompting, a multiple opportunity method (Snell & Brown, 2006) has been used in which steps completed incorrectly were corrected and steps not attempted were completed by the researcher while the participant’s view was blocked. Although using the single opportunity method may demonstrate depressed baseline levels, when all three students began the intervention, they engaged in fairly low levels of responding that increased gradually, suggesting that even if low, the baseline measures were not unreasonable.

As future researchers explore the use of video prompting with portable technology, it will be important to compare the effects across various devices. For example, although vision problems were not reported for any of
our students, it may have been difficult for them to discern the salient features of the video prompts on the iPod Touch screen. It is possible that the students would have done better if they had been able to watch a larger video. It might also be possible for individuals with physical disabilities to manipulate the slightly larger screen of an iPad rather than the smaller screen on the iPod Touch. As technology progresses, it will be possible to use devices that are in between laptop computers and handheld devices in size, such as the iPad. Future researchers may want to compare skill acquisition using an iPod Touch versus an iPad to determine if acquisition is more efficient with one device over the other.

There are several additional lines of future research that should be pursued. Although this study did provide further investigation into the use of video prompting with error correction, replicating this study with different tasks and students would be useful. Additionally, a component analysis of which aspects of the error correction procedure were the most salient will be important to investigate so that the most efficient procedures may be implemented. Another line of research would be to determine if individuals with intellectual disability could be taught to manipulate the small computer interfaces, such as the iPod Touch, independently.

In summary, this study compared the use of video prompting with and without error correction using the iPod Touch and found that the inclusion of error correction from the outset of intervention was beneficial for two of the three students. The data also present another demonstration that video prompting is an effective technology for teaching new skills to individuals with moderate to profound intellectual disability.

References


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