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The Effects of Video Prompting in Completion of Activities of Daily Living for Individuals with Traumatic Brain Injury

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Abstract

According to the Brain Injury Association of America (2020), more than 3.5 million experience acquired brain injuries (ABI) every year in the United States. With improving medical treatment, more individuals are surviving ABI; however, many rehabilitation facilities focus on the physical abilities of the individual rather than regaining independence in daily living skills. Video models have been used with success to teach daily living skills to individuals with developmental and intellectual disabilities, however, little research exists on the use of different types of video models to teach those skills to individuals with traumatic brain injury. The purpose of the present study is to assess the effects of video prompting in completion of activities of daily living (ADLs) to individuals with traumatic brain injury. This study used a multiple baseline across tasks with probes design. The primary researcher created video prompts for four ADLs for the participant to view. The participant viewed the video prompt for each step or set of steps in a task analysis for the ADL and attempted to complete the step. No feedback was provided to the participant during completion of the ADL. Data was collected remotely using a task analysis and videotapes of the participant completing the task.

Introduction

Brain Injury

Acquired brain injuries (ABI) can be caused by oxygen deprivation or near drowning, a stroke or seizure, substance abuse, toxic exposure, infectious disease or tumor, or even a lightning strike (Brain Injury Association of America [BIAA], 2020). Unfortunately, ABI is a common injury. In the United States alone, more than 3.5 million individuals experience an ABI every year (BIAA, 2020). According to the Brain Injury Association of America, someone acquires a brain injury every nine seconds in the United States.

Traumatic brain injury (TBI) is a type of ABI. According to the Centers for Disease Control and Prevention (CDC; 2020), a TBI is a disruption to the normal functioning of the brain caused by a blow, bump, or jolt to the head. The CDC says a TBI may be caused by motor vehicle-related injuries, assaults, strike or blow of an object to the head, or other unknown causes, however, it is most commonly due to falls (48%; 2019). Additionally, older adults (75 years and older) and children (0-4 years old) account for the majority of reported TBI cases (CDC, 2019).

Medical treatments after injury have improved, increasing the number of survivors of TBI; however, those with TBI often face significant, and sometimes permanent, changes to their life after injury (Landa-Gonzalez, 2001). The individual may have changes in their social, cognitive, emotional, and physical well-being which may impact their occupations and relationships. Unfortunately, most rehabilitation after the injury is focused on the physical body with physical and occupational therapy rather than regaining the skills for independence (BIAA, 2020).

While there is an increase in the survivors of TBI, many are left without needed rehabilitation and skills needed to return to daily work and previous levels of functioning. These individuals often must rely on family or other caregivers to complete activities of daily living (ADLs; Boschen et al., 2007). Often, these individuals return to living with their parents or live in a facility able to care for them. Currently, there is a lack of resources for those with TBI to rehabilitate and relearn skills needed for regaining independence.

Family's Role with ABI

Families often play a major role in the individual with ABI's life. Individuals with ABI often face challenges in completing tasks associated with daily living that they could once complete independently (McGraw-Hunter, Faw, & Davis, 2006). Due to difficulties in completing activities of daily living, individuals with ABI often depend on parents, spouses, siblings, or other relatives for assistance with these tasks which can lead to dramatic changes and strain on those relationships. Caregivers may experience mental health problems such as anxiety, depression, or social isolation, as well as a loss of income to care for the individual with TBI (Boschen et al., 2007).

It is common for caregivers to also feel as though they are underqualified or unable to meet the individual's needs (Fisher, et al., 2019). Recent research has shifted to looking at a family-directed approach for intervention which could help the family feel more skilled in caring for their family member. A model suggested by Fisher et al. (2019) incorporates hope, family expertise, and providing education and skill-building for the family. In other words, providers should shift focus to expanding the caregiver's skills and having them implement the intervention rather than a specialist or community-based

program. Researchers suggested that by training the family, it decreased the need for specialized services and allowed for the family to be more confident and competent in caring for their loved one or client.

A caregiver's ability to care for the individual may impact the individual's outcome. Braga, da Paz Junior, and Ylvisaker (2005) confirmed that parents could be trained to effectively carry out treatment plans and therapeutic activities and that their prior level of education was irrelevant. This could allow for more integration of therapeutic activities throughout the day instead of specialized care a few hours a week. Additionally, family-centered interventions have been shown to improve relationships within the family and family problem-solving (Wade, Michaud, Brown, 2006).

Applied Behavior Analysis

Applied behavior analysis (ABA) is the science in which tactics derived from the principles of behavior are applied to improve socially significant behavior (Cooper, Heron, & Heward, 2007). Experimentation in ABA is used to identify the variables responsible for the improvements of behavior (Cooper et al., 2007). ABA has been used to alter the behaviors of humans and animals, however, much of the research is centered around children and adults with intellectual and developmental disabilities. This has led to the false assumption that ABA is most suitable for those with autism or other developmental disabilities. As Baer, Wolf, and Risley (1968) stated, ABA must incorporate seven dimensions: applied, behavioral, analytic, technological, conceptually systematic, effective, and generality. These dimensions can be applied in a variety of contexts and populations. Applied means that the study and behaviors of interest are of

use and practical rather than simply theoretical. Behavioral requires the focus of the research to be something observable and measurable. Studies look at whether the behavior changed but also whose behavior was changed (Baer, Wolf, & Risley, 1968). The control a research has over a behavior is analytic while technological requires those techniques to be described thoroughly so that they are able to be used and repeated by other researchers. Along with technological, conceptually systematic requires a full description of the procedures in place that can be well understood by behavior analysts and others. Baer, Wolf, and Risley (1968) also say that the techniques used must be effective and be able to generalize to other settings across time.

Applied behavior analysis research can be found across an array of topics and specialties. One of these areas is in acquired brain injury (ABI), specifically TBI. Researchers are taking principles and treatment techniques that are commonly used with individuals with developmental disabilities and applying them with individuals with TBI. For example, Tasky, Rudrud, Schulze, and Rapp (2008) increased on-task behavior in individuals with TBI by presenting choices. Precision teaching and fluency training were successful in increasing physical, academic, and communicative skills for individuals with TBI (Chapman, Ewing, & Mozzoni, 2005). Additionally, research has shown that behavioral interventions may be used to decrease pathological gambling and academic response latencies in individuals with brain injury (Guercio, Johnson, & Dixon, 2012; Heinicke, Carr, & Mozzoni, 2009). These studies demonstrate the ability to use these ABA principles for this population.

Task Analyses

Task analyses have been used to teach a large array of skills such as community living and communication skills to individuals with disabilities. A task analysis involves breaking down a task into more manageable parts which may be easier for learners to understand and perform (Szidon & Franzone, 2009). This helps facilitate skill acquisition through learning the behavior chain, shaping, and successive approximations.

Though task analyses have been used for an extended period of time, parameters of task analyses were vague (Williams and Cuvo, 1986). Williams and Cuvo studied the difference between specified and generalized task analyses. Specific task analyses used detailed description of each step in the behavior chain. A specific task analysis may not be suitable for every learner; some learners may benefit from a more generalized task analysis which allows for some variability in responses which typically leads to the same outcomes. Researchers in this study looked at individuals in a rehabilitation facility for individuals with physical and intellectual disabilities. Participants used generalized and specific task analyses to perform upkeep procedures to their air conditioner-heating unit, refrigeration, stove top, and electrical appliances. They found that specific task analyses were best for training while generalized task analyses were most suitable for data collection purposes.

Video Modeling

Bandura's social learning theory suggests that individuals can learn new skills through observing a model (Bandura, 1977). The theory suggests that, by incorporating both visual cues from the model and observation, children can learn a large number of skills. This led to many new ways to teach such as through video modeling. Video modeling has since been used to successfully teach new skills to persons with and

without disabilities. Video modeling takes the task analysis of the task or scripted vocalizations and makes a video showing the steps to completion by a model. The video is then presented to the individual before the individual has an opportunity to engage in the behavior (Allen et al., 2010). The model may be a sibling, peer, adult, or even themselves. Video modeling has since been used to teach many skills such as activities of daily living and vocational skills.

One study used video modeling to teach children with autism functional living skills (Shipley-Benamou, Lutzker, & Taubman, 2002). The children learned five tasks through watching videos of a model completing the task from their point of view. Researchers found that this was an effective way to teach these skills and that they were still successfully completing the tasks when observed one month after the intervention.

Research shows that vocational skills can also be taught using video models. Allen et al. (2010) presented a study that used video modeling to teach vocational skills to four young men with autism. The participants used video models to learn how to work as a mascot and interact with customers in a retail setting. Researchers found that participants could successfully learn the targeted skills through video modeling. The four participants also reported satisfaction with this teaching method, providing high social validity. In another study, Kellems and Morningstar (2012) also taught vocational skills using video modeling to a group of young adults with autism. These participants learned to complete tasks such as cleaning restrooms, vacuuming, taking inventory and restocking shelves, and cleaning. The data showed that the video modeling led to a sudden increase in correctly completing tasks. As with Allen

et al. (2010), researchers also reported high social validity using video modeling in vocational settings.

Video Self-Modeling

One type of video modeling that is frequently used to teach new skills is called video self-modeling. Video self-modeling requires the individual to watch a video of themself performing the task and talking through each step. Bellini and Akullian (2007) conducted a meta-analysis on video modeling and video self-modeling for children and adolescents with autism spectrum disorders. They found that both were effective interventions for functional skills (i.e., washing hands, shaving, making a sandwich, making a bed, hanging clothes; Hagiwara & Myles, 1999; Lasater & Brady, 1995), behavioral skills (i.e., on-task behavior, pushing, and tantrums; Coyle & Cole, 2004; Hagiwara & Myles, 1999; Buggey, 2005), and social-communication skills (i.e., social initiations, responses to questions, conversation skills, and spontaneous requesting; Buggey, 2005; Buggey, et al., 1999; Sherer et al., 2001; Thiemann & Goldstein, 2001; Wert & Neisworth, 2003). Additionally, results showed to be maintained in follow-up sessions, as well as across people and settings.

While video self-modeling is considered an evidence-based intervention, it may not be suitable for everyone. Burton et al. (2013) also looked at video self-modeling to teach functional math skills to children with intellectual disabilities and autism. They had four participants view videos of themselves completing math questions involving paying and receiving change. Each participant showed improvements on these math skills; however, there was a decrease in performance during fading and follow-up. Researchers pointed out that this may be due to individual characteristics of the participants. They

suggest that these findings may help better support individuals with autism and intellectual disabilities in the classroom and learn more of the core curriculum. Additionally, the individuals were able to prompt themselves through the math questions. Participants reported high levels of social validity.

Video Prompting

Video prompting is another form of video modeling viewed from the client's perspective (Cannella-Malone et. al., 2006). Video prompting involves the client watching a model perform one step from the task analysis right before the individual attempts the step. This is repeated until the task is complete. Video prompting has been used successfully to teach individuals with developmental disabilities a variety of functional skills (Sigafoos et al., 2007). Researchers found that video prompting was effective in teaching adults with disabilities how to set the table and put groceries away while video modeling was ineffective (Cannella-Malone et. al., 2006). These findings could be due to the fact that the participants were only expected to watch a model of each step before attempting to complete the step themselves rather than watching the entire task before beginning it. Additionally, compared to video modeling, video prompting requires a shorter attention span which may be useful for individuals with disabilities (Cannella-Malone et. al., 2006). Another plausible explanation could be that video prompting uses videos from the client's perspective rather than from a third-person viewpoint.

The use of video prompting to teach ADLs is common in research. Studies by Cannella-Malone, Wheaton, Wu, Tullis, Park (2012) and Sigafoos et al. (2007) used video prompting to target ADLs for individuals with developmental and intellectual

disabilities. In the study by Cannella-Malone et al. (2012), researchers looked at pairing video prompting with other behavior analytic procedures. They compared the effects of video prompting with and without error correction on skill acquisition of daily living skills for three students with intellectual disabilities. They attempted to teach table washing and sweeping using the video modeling procedure. Overall, performance improved from baseline, though only two of the participants met mastery with the addition of error correction for one of the tasks. This is likely due to the lack of feedback throughout their performance of the task. Researchers suggested that the participants continued to complete the task incorrectly, even after the addition of error correction procedures. As with any study, there were multiple limitations of this research including only using two tasks and three participants, tasks broken down into too many components, and a limited baseline procedure. They state that the data demonstrates that video prompting is effective; however, the inclusion of error correction procedures from the beginning was important for two of the three participants while it did not appear to make a difference to the third participant.

In a study conducted by Sigafoos et al. (2007), researchers focused on using video prompting and a fading procedure. In the study, three adult men with developmental disabilities used video prompting to complete dishwashing. Researchers began using nine video prompting videos, decreased to four chunked videos, then two chunked videos, and lastly one video of the whole task. Data demonstrated that all three participants had immediate increase in the steps performed correctly, and they continued at a high level of performance and required less than ten exposures to the video

prompting procedure. This provided evidence that video prompting may be faded and withdrawn while maintaining successful performances.

Video Modeling for TBI

Though there is an abundance of research on video modeling for individuals with autism, intellectual disability, and developmental disabilities, research on any type of video modeling for individuals with brain injuries is sparse. However, with the few published research articles available, video modeling and video self-modeling have shown to be successful intervention strategies for individuals with TBI.

Video modeling has been successfully used for emerging speech in adults with TBI (Nikopoulos, Nikolopoulou-Smyrni, & Konstantopoulos, 2013). Researchers looked at one participant in an AB design which was repeated 18 times. The participant watched a video of an unfamiliar model saying a word with the word then appearing on the screen. Results showed that the participant performed the words correctly, as well as spontaneously generalized to new words with similar sounds and syllables. Researchers explain that this could be due to bringing back relevant cues, visuals, or that video modeling may encourage rapid skill acquisition. They suggest video modeling be used in rehabilitation programs.

Another study used video self-modeling and feedback to teach cooking skills to individuals with TBI. Researchers recorded participants completing a recipe with instructions (McGraw-Hunter, Faw, & Davis, 2006). They then presented the video self-model to the participant before preparing that food during intervention. Using a multiple probe design across participants design, they concluded that video modeling with prompting and feedback were an effective treatment in teaching individuals with TBI to

prepare a simple stovetop recipe. In fact, three of the four participants met criterion with four training sessions. The skills maintained during follow-up sessions two and four weeks after intervention and generalized to a novel cooking recipe. They suggest that future research should look into other ADL tasks due to a lack of research on this topic, as well as study whether video modeling is sufficient for skill acquisition without feedback.

Current Study

To the knowledge of the primary author, it does not appear as though there is much research on the use of different types of video models for individuals with TBI. Though there is a large number of research articles demonstrating successful implementation of video prompting for individuals with developmental and intellectual disabilities, little research exists for the use of video prompting for individuals with TBI (McGraw-Hunter, Faw, & Davis, 2006). McGraw-Hunter et al. (2006) state that individuals with ABI often have challenges completing ADLs and offer research in using video self-modeling with feedback. While this may be a successful model, there is no research focused on video prompting which may be easier to implement for individuals who are unfamiliar with the skill they are modeling in for the video self-model.

Additionally, McGraw-Hunter et al. (2006) use a model requiring feedback. Feedback requires the caregivers or researchers to be present while the individual is completing the task. A goal of this study is to remove the caregiver and researcher to make this model a way for individuals to complete tasks without another person present. Additionally, this model allowed researchers to train caregivers how to

implement video prompting, decreasing the need for help outside of the home for the individual with TBI and their family.

Another concern with the McGraw-Hunter et al. (2006) is the narrow focus on simple stovetop cooking for two recipes. Though this is a valuable skill for some individuals with TBI, this skill may not be functional for some individuals such as those who live in residential homes. Additionally, there are a multitude of other daily living skills important to the independence of the individual. This study allowed for individualized ADL tasks depending on the client's specific needs.

The current study looked at the use of video prompting for accurate completion of activities of daily living tasks for an individual with traumatic brain injury. The participant and caregiver were asked about ADL tasks that would benefit the participant. From there, the primary researcher selected four of the ADL tasks including cleaning the toilet, cleaning a shower, making an event in Google Calendar, and cleaning a bathroom sink/mirror. The primary researcher created the step-by-step videos and gave them to the participant. This allowed for individualized ADL tasks that are functional for the participant. This study did not provide feedback. To account for this, adapted versions of the step-by-step video were made when mastery was not met after five intervention trials. These adapted videos provided more individualized supports where the participant was having difficulties. The goal of this study was to determine if video prompting increased successful task completion for ADL tasks without feedback for individuals with TBI.

METHODOLOGY

Participants

There was one participant for this study. The participant was a 36-year-old male. He was diagnosed with severe traumatic brain injury with diffuse infarcts and subdural hemorrhage four years prior to the study after a motor vehicle accident. The participant is on medication for anxiety. He had no prior experience using video modeling or video prompting. The primary researcher in this study was a second year graduate student in the Psychological Sciences Master's program with a concentration in Applied Behavior Analysis at James Madison University.

Setting

The participant completed all baseline, intervention, and probe trials of this study at the participant's residency. The primary researcher used a GoPro to video herself completing the specific ADL tasks in her environment using materials similar to what the participant had available. The researcher edited the video prompts using iMovie before sending the videos to the participant's caregiver. The researcher and assistants collected data remotely by viewing the video recordings of the participant completing the tasks.

Materials

The participant and caregiver used materials found in their house to complete the daily living activities (e.g., cleaning products, phones, paper towels, etc.). Task analyses were formulated with the caregiver to meet the caregiver’s expectations and needs of the participant. All videos were recorded with a GoPro device and head mount for the video prompts and by the participant while completing the tasks. Videos were saved on a SD memory card. A lockbox was used to transport the SD card to and from the participant’s

house and research office. A MacBook Air was used to edit the video prompts during intervention. The participant used his Android cellular phone to watch the video prompts while completing the tasks.

Independent variable

The independent variable was the introduction of video prompting for completing activities of daily living. The researcher created all four video prompting videos. The researcher broke down each of the tasks into individual steps with slides in the video to prompt the participant to pause the video and complete that step. The participant watched the first step of the task, paused the video, and completed that step of the task. This was repeated until the task was finished.

Dependent variable

The dependent variable was the percent of the steps correctly completed independently from the task analysis for each of the four tasks. The percent correct was determined using the video recording of the participant completing the task was compared to the steps in the task analysis. To begin a session, the participant's caregiver assisted the participant in putting on the GoPro headset, turning the camera on, and starting the video. The participant wore the headset while completing the entire task. At the end of the session, the caregiver turned off the video.

Experimental design

A multiple baseline with probes design was used to evaluate the effectiveness of using video prompting to teach daily living tasks to an individual with traumatic brain injury. To begin, Task A, Task B, Task C, and Task D were each probed. Task A was probed twice more before the introduction of the independent variable. Once Task A was

mastered, tasks B, C, and D were probed. Task B was probed once more to get a total of three baseline data points. Following the final Task B probe, the participant began video prompting with Task B. Once Task B was mastered, Tasks C and D were probed. Task C was probed once more to get a total of three baseline data points before the introduction of the independent variable. Once Task C was mastered, Task D was probed once more for a total of four baseline data points. Following the final Task D probe, the participant began video prompting with Task D until mastered. In addition, maintenance trials were conducted for each of the tasks. Specifically, there were four maintenance trials for Task A, three maintenance trials for Task B, two maintenance trials for Task C, and one maintenance trial for Task D.

The multiple baseline with probes design provides information about the initial level of performance and what happens to untrained tasks once the intervention is applied through intermittent measures (Cooper, Heron, & Heward, 2007). The multiple baseline design with probes allows for comparison between trained and untrained tasks to determine if changes are due to video prompting. The design also reduces the number of repeated sessions while demonstrating the relationship between video prompting and acquisition of skills for ADLs. This design also serves to limit the possibility of learning the skills through other means and maturation, while also isolating the acquisition of one skill from another.

Experimental conditions

Baseline

The participant completed three baseline trials for Task A. Task B has two probes (before Task A and before Task B), as well as an additional baseline trial to establish true

baseline. Tasks C and D did not require additional baseline trials. Task C was probed three times (before Tasks A, B, and C) and Task D was probed four times before being taught (before Tasks A, B, C, and D). The caregiver told the participant to complete a task. The experimenter nor caregiver provided feedback. The experimenter observed the video recordings from the caregiver on the SD card. The experimenter used the video recordings to score performance on the task analysis.

Intervention^

The caregiver assisted the participant in putting on the GoPro headset and turned the camera on before the participant began completing the task. The caregiver told the participant to watch the video and complete the task. The participant viewed a video of the first step in the task and then attempted to complete that step. This was repeated until each step has been completed. No feedback or praise was given to the participant while completing the task. Mastery criterion was 90% accuracy for each trial over 3 separate sessions.

Once Task A was mastered, a probe was used to reassess Tasks B, C, and D, as well as a maintenance trial for Task A before the participant started with the Task B video prompt. Once Task B met criterion, Tasks C and D were probed again and maintenance trials were conducted for Tasks A and B before Task C was presented. This continued until all four tasks were mastered. This demonstrates retention of the already mastered ADL tasks and allows for baseline probes before introducing the next task.

The experimenter and observer scored data using the video recording of the participant completing the task. Performance of each step was scored using a task analysis as the data sheet for each of the four tasks.

Intervention^. When the participant did not reach mastery after four sessions in Phase 1 for a task, the participant continued to Phase 2. During this phase, the participant was provided with a video of more individualized steps for task completion based on the observed problem areas. This included providing emphasis on specific parts of each step or clarifying the step for the participant. Mastery criterion was 90% accuracy for each trial over three separate sessions.

Results

Data Analysis

For each trial, for each task, the percent of steps correctly completed were calculated. These percentages were then plotted for visual analysis. The graph demonstrates the baseline, phases of intervention, and probes throughout the study. The graphs also allow for comparison between baseline and intervention across tasks. There was no overlap between baseline and intervention phases, showing a strong change in data from baseline to intervention.

Figure 1 displays the results across tasks for the participant. The x-axis shows the sessions and the y-axis labels the percentage of steps correctly completed by the participant for each task. The solid vertical phase change lines identify the transition from baseline to intervention. The dotted vertical phase change line for Task C shows the change from intervention to intervention prime. The unconnected data points after the connected intervention data points are the maintenance trials. The graph presents the data across the four tasks: Task A- cleaning the toilet; Task B- cleaning the shower; Task C- making an event on Google Calendar; and Task D- cleaning the bathroom sink and mirror. Mastery criteria was 90% accuracy for each trial over 3 separate trials.

As shown in Figure 1, the average for baseline across the four tasks was 45.69%. The participant reached mastery in an average of five trials (range of 3-8 trials) across the four tasks. The maintenance trials after intervention demonstrate retention of each of the tasks despite new task interventions being introduced. All maintenance trials maintained steady at 100% throughout the study.

Task A, cleaning the toilet, began at an average baseline of 55.33% (range of 54-58%). The baseline data points were stable with little variability. Once intervention of the video prompt was introduced, the participant immediately increased to 83% followed by three trials of 100%, meeting mastery criteria. This was maintained at 100% for all four maintenance trials.

Task B, cleaning the shower, started at an average baseline of 36% (range of 18-45%), showing a downward trend. The participant met mastery criteria after just three trials by scoring 100%, 91%, and 91%. This was maintained at 100% for the three maintenance trials.

Google calendar was Task C. This task had a more variability in baseline with scores of 56%, 44%, and 25% (average of 41.67%). For intervention, the participant did not meet mastery after the first five trials for Google Calendar, meaning this task went into intervention prime. For intervention prime, the video prompt was edited to focus in on the specific step the participant consistently missed during the first intervention phase. The edits included zooming in to focus on the specific buttons required to complete the step and slowing down that section of the video. After these changes were made, the participant scored 100% for all three trials and maintenance trials.

Lastly, the final task was cleaning the sink and mirror in the bathroom. The average baseline trials was 48.75% (range of 40-55%) with no trend. During intervention, the score increased to 100%, dropped to 89%, and then increased back up to 100% for the following three trials. The participant met mastery after 5 trials. The maintenance trial for cleaning the bathroom sink and mirror shows 100% was maintained.

Inter- Observer Agreement

Inter- observer agreement (IOA) was assessed on a minimum of 30% of baseline and maintenance trials and 30% of intervention trials. IOA is the degree to which two or more independent observers report the same observed values after measuring the same events (Cooper, Heron, & Heward, 2007). In this study, the two independent observers viewed the video recording of the participant separately. Using the task analysis, researchers divided the total number of agreements between the two observers by the total number of agreements and disagreements between the two observers and multiple by 100 to get a percentage. For baseline probes, the researchers reported 97.5% agreement (agreement in 78/80 intervals). For intervention, the researchers reported 100% agreement (62/62 intervals).

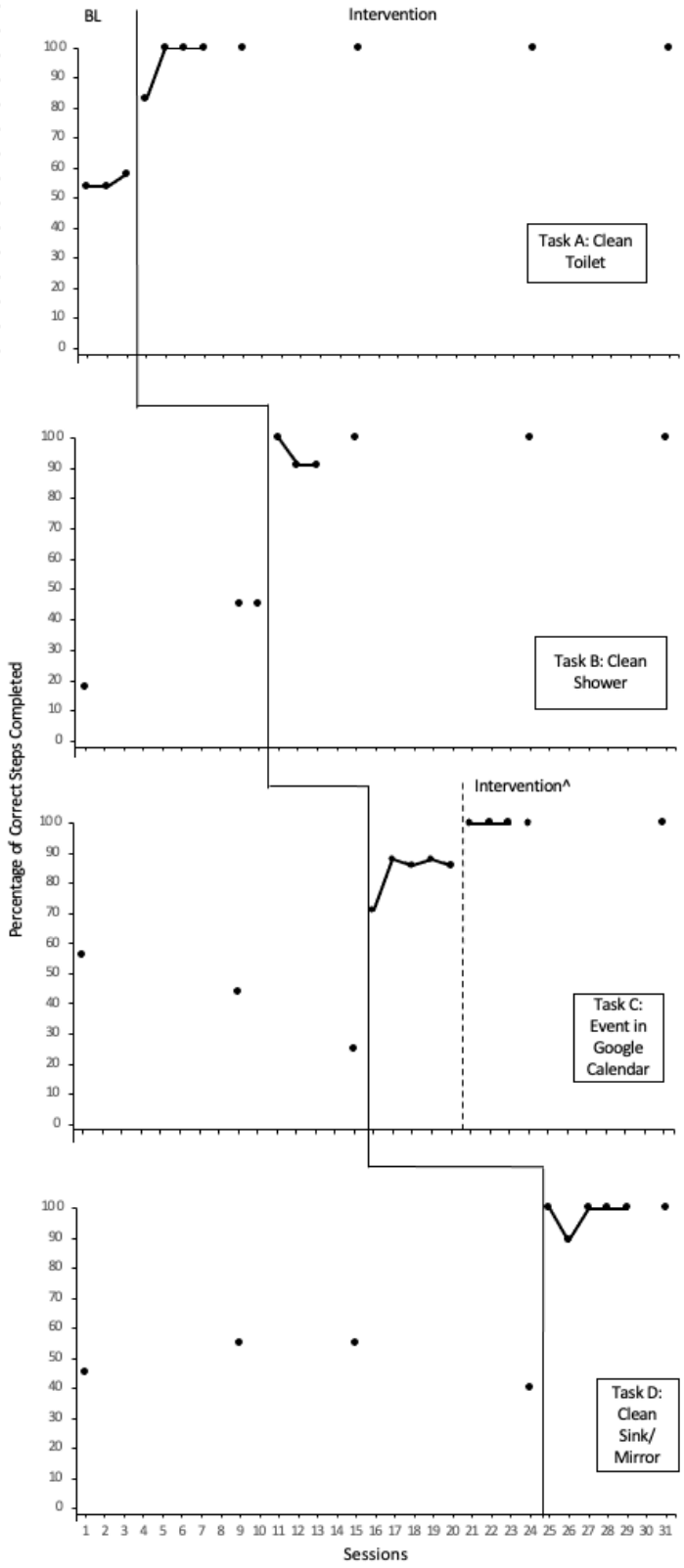

Figure 1. Percentage of steps completed independently for each of the tasks.

Discussion

The current study looked at the use of video prompting for accurate completion of activities of daily living tasks for an individual with traumatic brain injury. The participant and caregiver were asked about ADL tasks that would benefit the participant. From there, the primary researcher selected four of the ADL tasks: cleaning the toilet, cleaning the shower, making an event in Google Calendar, and cleaning the sink and mirror. The goal of this study was to determine if video prompting increases successful task completion for ADL tasks without feedback for individuals with TBI.

The results of this study demonstrate that video prompting may be an effective technique for the participant with TBI to complete daily living tasks. The participant reached mastery in eight or fewer trials for all of the tasks. He was able to maintain 100% through all maintenance trials.

This participant had higher baseline scores than most studies may accept. Because the participant is an adult who did not acquire his TBI until adulthood, many of these tasks could be considered reacquisition of tasks rather than novel tasks. Despite the high baseline scores, many tasks cannot be completed successfully unless the entire task is completed. For example, an individual may reach 80% on starting a washer for laundry but did not put the soap in. The clothes would not be considered clean. For the tasks in this study, many of the essential steps were not being fully completed, leading to his caregiver having to complete the task after him. Because of this, he was not able to complete the tasks independently. The video prompts allowed him to have the support needed to complete the task successfully and independently.

With any study for individuals with disabilities, each participant is going to have unique strengths and problem areas. For the participant in this study, he struggles with scanning. Scanning deficiencies is common among individuals with TBI and should be considered when implementing video prompting. This may explain the challenges with Google Calendar in this study. The step of the task analysis the participant consistently missed involved scrolling down on his phone screen to look for "Add reminder." The participant said in the video that he could not find that and that he did not have that on his phone. Once beginning intervention prime, the researcher used the video already created and edited that step of the video. This editing included slowing down this step and zooming in on the "Add reminder" button. These small changes helped the participant be successful and reach 100% in just the first trial. He met mastery after three trials in intervention prime.

This study found success in using video prompting without feedback for this participant with TBI. Many previously studies used multi-element treatment packages with a type of video modeling and feedback. This study eliminated feedback for the participant, and the participant met mastery criteria in eight or fewer trials. By removing feedback from the treatment package, the researcher or clinician does not have to be present while the participant is completing the tasks. Additionally, this may save time by removing the need to train the caregiver to provide feedback and does not require the caregiver to be present while the individual with TBI is completing the task.

As for social validity, both the participant and his caregiver reported they were happy with using video prompting. The participant asked the researcher for more tasks to do after the study, saying he found this an enjoyable and helpful way to acquire

skills. His caregiver reported she noticed a marked difference in the cleaning tasks while using the video prompting. She reported it was a simple and easy to use procedure. Both said they would happily continue and use this method in the future.

The researcher observed a few considerations for this study. First, no specific reinforcers were identified or used. This participant worked independently for natural reinforcers such as social praise from his caregiver. The GoPro headset to record the participant completing the task may be a source of social reinforcement. The primary researcher noted that the participant often talked to himself or to the researcher through the video recording while completing the tasks. Future participants or clients may require a specific reinforcement schedule in order to complete the tasks with video prompting.

Another consideration is that the video prompting videos for the participant were recorded at the researcher's environment, meaning the videos were not identical to the participant's environment. The difference in settings did not appear to be a problem for this participant; however, others may find it challenging to generalize environments from a video into their setting.

Finally, another consideration is that the participant did not receive any explicit training on how to use the video prompt. The participant was told to watch the video and follow the steps provided in the video. The video prompt included cues to pause the video and complete each step. The participant was able to successfully use the video prompt despite no teaching trials.

Single case designs with one participant are susceptible to confounding variables. This study planned for this limitation through the use of a multiple baseline

design with probes, however, this method should be tested with more participants with TBI. More participants would determine if this method may be suitable for others with TBI, considering each individual with a brain injury is different. Additionally, this design should be replicated with more ADL tasks to determine if video prompting may be a suitable method for completing other ADL tasks.

Future researchers should look at training the caregiver to make the video prompts, allowing for a more sustainable method for the family by removing the researcher or clinician altogether. Additionally, more research should be conducted across other daily living tasks. This study aimed to include a variety of tasks, but new tasks should be included in future research. Lastly, more research should be conducted on using different types of video modeling without feedback. While many different types of video modeling studies have been published, most are multielement designs using the video modeling and feedback.

At present, few methods are known and available for survivors of TBI to regain independence in completing ADL tasks. Because of this, many children and adults with TBI must rely heavily on their caregivers for support. This study saw promising results for using video prompting for individuals with TBI. The participant was able to master each task in eight or fewer trials. This design had high social validity in that both the participant and caregiver reported the video prompts were easy to use. The participant asked the researcher for more tasks to do with the video prompts and suggested some things he would like to learn with this method. The caregiver reported it took very little effort on her part to implement the video prompt and she noted a difference in the participant's cleaning.

Results of this study are consistent with findings from McGraw-Hunter et al. (2006) who found that video self-modeling with feedback was a successful method in teaching stovetop food preparation to three out of the four participants with TBI in their study. Though they found a successful treatment package for three out of their four participants, their combination of video self-modeling and feedback may be more challenging to implement and requires a caregiver or clinician to be present to provide the feedback. This current study looked at video prompting which one might argue is simpler to implement and removed feedback which requires additional people present while the individual is completing the task. The current study also expands the types of ADL tasks from focusing on stovetop recipes to cleaning various areas of the bathroom and making an event in Google Calendar. The expansion to other tasks may help better target individualized needs of clients.

In conclusion, the results of this study show that video prompting without feedback was successful in teaching a participant with TBI how to complete four ADL tasks. With more research, this simple design may be able to help survivors of TBI regain independence in ADL tasks without the need to work directly with a BCBA or other care provider. Video prompting without feedback may be a way for caregivers to better support their loved one while providing a better outcome for the individual with TBI and relieving some hardship for the caregiver. Video prompting without feedback could be a simple way to help those with TBI access a more fulfilling life while promoting dignity and autonomy.

Task Analyses for Video Prompting for Participant

Cleaning the Toilet

1. Get wipes out
2. Get spray out
3. Wipe top of toilet and lid
4. Open toilet lid
5. Wipe seat
6. Wipe base of toilet
7. Put cleaner in toilet bowl
8. Use brush to scrub toilet bowl
9. Put toilet brush away
10. Throw wipe away
11. Flush toilet
12. Put spray and wipes away
13. Wash hands

Cleaning the Shower

1. Get paper towels
2. Get spray out of cabinet
3. Open shower
4. Get items out of shower
5. Spray shower walls
6. Wipe shower walls
7. Spray shower floor
8. Wipe shower floor
9. Put items back in shower
10. Throw paper towel away
11. Put cleaning supplies away
12. Wash hands

Make an Event in Google Calendar

1. Open Google Calendar
2. Click the "+"
3. Click "Event"
4. Enter title of event
5. Enter/check start time
6. Enter end time
7. Add reminder of 10 minutes before event
8. Save event
9. Close Google Calendar app

Cleaning the Sink and Mirror

1. Get paper towels out

2. Get wipes out
3. Get spray out of cabinet
4. Clear off counter/sink
5. Wipe off counter
6. Spray mirror
7. Wipe mirror
8. Put items back on counter
9. Put spray back in cabinet
10. Throw wipe away
11. Wash hands

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