

Spring 2015

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Recommended Citation

Conklin, Carly, "Literature Review and Case Study of the Functionality of Video Self Modeling" (2015). *Honors Research Projects*. 168.

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Literature Review and Case Study of the Functionality of Video Self Modeling

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Abstract

This report includes a literature review and case study examination to determine the functionality and effectiveness of video self-modeling as a speech-language therapy technique for a child with autism spectrum disorder (ASD). Research has shown that video modeling is effective to teach language skills to individuals with ASD. This case study focused on teaching a child with ASD receptive language skills to identify emotions based on body language and tone of voice. A single subject pretest posttest design was used to measure the results for the case study participant.

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Introduction

In recent years the prevalence of autism spectrum disorders (ASD) has increased to the current rate of affecting 1 in 91 individuals. ASD diagnoses range from severe to mild.

Additionally, ASD diagnoses are more common in males than females; recent research has shown it to be four times more prevalent in males (Ganz, Earles-Vollrath, & Cook, 2011).

According to the Diagnostic and Statistical Manual of Mental Disorders 5th edition (DSM-5) the definition of ASD includes social communication impairments, restricted interests, and repetitive behaviors. Examples of social communication impairment that a person with ASD must exhibit are deficits in social-emotional reciprocity, deficits in nonverbal communicative behaviors used for social interaction, and deficits in developing and maintaining relationships appropriate to developmental level. One weakness experienced by someone with ASD is the failure to initiate or respond to social interactions. Another social-emotional reciprocity deficit is the failure to achieve normal back and forth conversation with a conversation partner. Persons with ASD also display impaired nonverbal communicative behavior; examples of this are abnormalities in eye contact and body language. Difficulty understanding relationships is another complication that accompanies ASD. Two main examples of this are the inability to share in imaginative play and an absence of an interest to build relationships with peers. A person may also exhibit deficits in understanding gestures and the appropriate use of gestures. A person with ASD may not understand and use facial expressions while communicating with another person. A person must exhibit all three of these social communication impairments to receive the diagnosis of ASD (American Psychiatric Association, 2013).

Additionally, a person diagnosed with ASD must exhibit restricted interests and repetitive behaviors. Restrictive interests and repetitive behaviors may manifest in lining up toys, flipping objects, hand flapping movements, idiosyncratic phrases and echolalia. Idiosyncratic phrases refer to phrases that are only familiar with the people who created them. Echolalia is the repetition of words or phrases that other people say. People who have ASD may also have an excessive adherence to routines. If a person with ASD follows a routine and the routine is interrupted, the person will exhibit extreme distress and have difficulty with the transition. An example of this would be having a substitute teacher for a day. Another characteristic of ASD is restrictive thinking. Highly restricted interests can include strong attachment to an object or a perseverative interest in an unusual topic. Children with ASD may exhibit an abnormal intensity or focus for objects. A person with ASD may also exhibit hyper or hypo activity to sensory input. Hyperactivity to sensory input would be an increased reaction. Hyposensitivity is when there is a diminished sensitivity to sensations. Hyper and Hypo sensitivity can be applied to pain, temperature, sounds, smells, lights, and more (American Psychiatric Association, 2013).

In order for ASD to be diagnosed, symptoms must be present in early childhood development. These symptoms must be present in early childhood, however they may not fully manifest until later in life. Autism is commonly diagnosed at age two. A requirement for a diagnosis is that the symptoms cause a significant impairment on the everyday functioning of the individual. A significant impairment could be in social, occupational, or other areas that affect the persons day to day functioning (American Psychiatric Association, 2013). The team that diagnoses ASD is multidisciplinary, including pediatrician, psychologist, speech-language pathologist and occupational therapist.

There are many co-morbid disabilities that can occur with ASD. Co-morbid disorders that may be present are Down syndrome, attention deficit hyperactivity disorder, childhood apraxia of speech or intellectual disabilities (American Psychiatric Association, 2013). Children with autism may have difficulty learning because a characteristic of ASD is impairments in attention. Children with ASD may also have deficiencies in joint attention (Gardner & Wolfe, 2013).

Although attention processing can be a weakness for children diagnosed with ASD, research has shown that children with ASD have strong visual processing abilities. Children with ASD respond to visual input as a primary way of receiving information rather than through auditory learning (Gardner & Wolfe, 2013). There are many therapy techniques that can be used for ASD. One of these types of therapies is video modeling. Video modeling is the use of videos to teach information which works well for children with ASD because of the preference for visual information (Gardner & Wolfe, 2013).

Problem Statement

The purpose of this study is to determine if video self modeling can be used to teach receptive language skills in a school based setting. There is a lack of research on the effectiveness of video self modeling used in school-based settings (Maione & Mirenda, 2006). The use of video self modeling in this study will help to introduce another therapy technique that can be used as intervention in school settings. It is believed that video self modeling will result in the child identifying emotions, based on previous research of the effectiveness of video modeling and visual processing abilities. Two primary research questions guided this study: What is the effectiveness of video self modeling to teach receptive language skills for facial expressions and body language? How effective is video self modeling in a school based setting?

Literature Review

Video modeling is an evidence based therapy technique used commonly for children with ASD. In video modeling therapy a video is created of a model performing the target behavior. The video is then shown to the child and the child is expected to imitate what they view in the video (Banda, Matuszny, Turkan, 2007). There are three different types of modeling. The first is video modeling where the child views a model demonstrating a target behavior. The second is video-self modeling where the child views themselves demonstrating a target behavior. The third is in-vivo modeling where the child views people live role-playing. Video-self modeling is when a child is shown doing a target behavior. Video-self models can be created by having a child do a desired task with cues, but editing out the cues in the final video. There are many different ways to create the video model when the child is the star, most involve editing out the negative behaviors so it appears as though the child is only doing the desired behavior. Video-self modeling is effective because the child enjoys watching him/herself as the "star" of the video. In-vivo modeling is a bit different because it involves live role-playing in front of the child. Vivo-modeling requires more time for training and implementing than video modeling. Video modeling has also been found more cost effective than vivo-modeling. There is also a type of video model that demonstrates the task from the point of view of the child. (Graetz, Mastropieri, Scruggs, 2006).

Video Modeling description

Video modeling is a type of teaching strategy that many teachers and speech-language pathologists have utilized for children with ASD. Video modeling is an evidence based strategy often used to teach socialization, communication strategies, life skills, and improve behavior. Research has shown video modeling to be an effective therapy technique for improving deficits in these areas (Banda et al., 2007). Moreover, video modeling can use peers or adults as models.

Children who are visual learners, children who have trouble with social interactions, and children who find television reinforcing are generally successful video modeling therapy candidates (Graetz et al., 2006). One of the main reasons that video modeling works well to teach children with ASD is because these children are able to learn tasks better through visual learning rather than auditory. Teachers, speech-language pathologists, and parents use video modeling because it is easy to present the child with only wanted behaviors, and unwanted behaviors can be edited out of the video before it is shown to the child. Research also shows that children with ASD can use video modeling to improve more than one target behavior (Banda et al., 2007).

Video Self Modeling

Additionally, video self modeling has been shown to be effective for children who are diagnosed with ASD (Bellini & McConnell, 2010). Video self modeling is when the child in therapy models the target behavior for the video (Graetz et al., 2006). The video that the child watches in therapy shows the child doing the behavior successfully. Video self modeling is effective because it increases motivation for the subject to watch the video. Individuals with ASD like to watch themselves on the television. In a regular video modeling therapy, the most successful trials were when the subjects in the video visually resembled the child watching the video. This discovery led to researchers using the child in therapy as the model, which gave more successful results. Video self modeling maximizes the amount of attention that the individual pays to the video (Boudreau & Harvey, 2013). Furthermore, video self modeling focuses on the individuals' strengths. The populations that can utilize video self modeling include children, adults, and individuals with learning disabilities, ASD, and physical disabilities. Many self video models are created through editing videos to make the individual appear to be doing the target behavior successfully (Bellini & McConnell, 2010).

There are two types of self-video models. The first type is positive self-review. Positive self review is when the individual sees themselves performing a behavior that they have mastered, but they only rarely demonstrate. A main focus of positive self review video self modeling is to increase frequency of a behavior that was once mastered but is not performed as much anymore. The second type of video self modeling is video feed forward. Video feed forward is when an individual views a video of themselves performing a behavior that is above their skill level. Additionally, video feed forward is used when the individual cannot perform the behavior by themselves, but may be able to do so using prompts. These prompts are edited out of the video and the individual appears to be performing the task alone (Bellini & McConnell, 2010).

Video modeling research has shown that video modeling is effective in increasing daily living skills such as setting a table, meal preparation, shaving, and brushing teeth (Banda et al., 2007 p.48). An additional daily living skill that video modeling has been proven effective for is preparing and eating an afternoon snack and cleaning up afterwards (Shrestha, Anderson, & Moore, 2013). In addition to that, there is research that supports that video modeling helped to teach first aid skills (Ergenekon, 2012). In a study by Shipley-Benamou, Lutzker, and Taubman the effects of teaching functional living skills by video self modeling shown to be effective (Bellini & Akullian, 2007).

Furthermore, Video modeling has also been proven by research to be effective for increasing communication skills (Banda et al., 2007). After the prompts were taken out of the videos, the children involved in the study by Boudreau and Harvey showed increased spontaneous interaction (2013). Some social skills that have been improved by utilizing video modeling include reciprocal play, spontaneous greeting, and social initiations (Banda et al.,

2007). A study by Charlop-Christy and Daneshvar in 2003 showed that children with ASD were successfully able to be taught perspective taking (Graetz et al., 2006). Out of the studies reviewed, ten showed improvements in social communication skills. In a study by Wert and Neisworth video self modeling was used in a school setting to teach children with ASD spontaneous verbal requests (Bellini & Akullian, 2007).

Additionally, play skills can be taught using video modeling (Boudreau & D'Entremont, 2010). Another study showed that all six participants in the study were able to maintain and generalize play skills to new toys, three weeks after the study ended (Cardon & Wilcox, 2011). Moreover a research study proved that children could be taught how to play guitar hero, an interactive video game, by the video model on the video game screen (Blum-Dimaya, Reeve, Reeve, & Hoch, 2010). In a study by Sancho, Sidener, Reeve, & Sidener video modeling increased scripted play actions for two children (2010). Additionally a study done by Kinney, Vedora, and Stromer in 2003 showed that generative spelling could be improved by video modeling (Banda et al., 2007). In a study by Moore et al. a child age five learned to write her name using video modeling (2013).

In addition to increasing positive behaviors, video modeling has also been proven to reduce negative behaviors. In a study by Buggery in 2005, it is shown that video modeling can reduce aggressive pushing and tantrums. Furthermore video self modeling can also be used to reduce problem behaviors. Problem behaviors that were targeted through video modeling included decreasing the amount of times a child would get distracted and off task during a therapy session (Bellini & Akullian, 2007).

Out of twenty-six studies about video modeling and video self modeling, eleven of the studies involved children ages three to five years old. Twelve of the studies involved children

ages five through thirteen. Two of the studies had children younger than three years old and one study involved children older than thirteen. There are no video self modeling studies in a school based environment with school aged participants. For this reason, this honors project will provide a research study to determine if video self modeling is effective in school based settings. This study will determine if video self modeling can improve a child's ability to receptively identify emotions based on body language, facial expression, and tone of voice.

Methods

The participant in this study was an eight year old male, Bobby, with ASD. He had no comorbid disorders and receives speech-language therapy for one half hour two times a week in a school setting. Speech-language therapy focused on attention, recognizing emotions in people, and reducing echolalia. Bobby is currently using a video model in speech-language therapy for another language skill. Bobby receives speech-language therapy from a graduate student clinician under the supervision of a speech-language pathologist while he attends school two days a week. The speech-language pathologist reported that Bobby enjoys using video self modeling and is very motivated to watch the videos and imitate them. Previous to the study, video modeling was demonstrated to the student using an Apple iPad, therefore this video self modeling was also shown on an iPad. Bobby self reported to enjoy watching movies on the iPad. The speech-language pathologist has reported that Bobby has been demonstrating an increase in echolalia over the past weeks. Bobby was chosen for the study through convenience sampling. A consent form was sent home with Bobby explaining the procedure of the study and information for the parents. Parental consent was required and obtained because Bobby is under the age of 18. The consent form asked for voluntary participation in the study and confidentiality of the participants name and identifying information was guaranteed.

The video model was created by the researcher. The researcher used iMovie on an iPad mini. First, the researcher asked Bobby's teachers and speech-language pathologist his speech-language therapy goals. The researcher worked with Bobby's teacher to determine what target behaviors the video model should consist of. The researcher and graduate student clinician created the video by prompting Bobby during a speech-language therapy session and recording Bobby's answers. The prompts were edited out of the video for the therapy video. The video model was shown to the child once each therapy session for three therapy sessions.

This study used a pre- and post-test case study to investigate the effectiveness of video-modeling. This research design was chosen because it provided adequate opportunities to collect data before, during, and after the intervention. Baseline data were collected through observation of Bobby in therapy before the video modeling intervention was initiated. Opportunities to collect data during intervention were ample because Bobby received speech-language therapy every day he attended school. The graduate student clinician incorporated the video modeling therapy into the regular sessions because the video modeling therapy addressed one of Bobby's goals. Data were collected by written records of the child's response after being shown the video model. The intervention was administered by the graduate speech-language pathology student clinician who worked regularly with Bobby while the researcher observed. Data were collected by the graduate student clinician. Bobby was introduced to the researcher during regular classroom time. The graduate student explained to Bobby that the researcher would be in his speech-therapy session. The graduate student informed Bobby that he would be watching a video in therapy. Bobby was very excited to watch the video.

The reliability and validity of the data were achieved because the pre and post test data were collected by a trained graduate student clinician who did not have knowledge of the study's

hypothesis. The graduate student clinician was trained and supervised by her clinical supervisor, a licensed speech-language pathologist who specializes in working with children with ASD. The intervention was administered in a private therapy room at the child's school during a regularly scheduled speech-language therapy session.

The study started by gathering baseline data about the target behavior of Bobby during his regularly scheduled speech-language therapy. The target behavior of this study is for Bobby to identify emotions based on body language, facial expressions, and tone of voice. Video clips were created featuring the Bobby's teacher exhibiting a happy tone of voice, a hand motion for quiet, a harsh tone of voice, pointing to paper, a stern look, and tapping her finger to her palm. Desired answers are, "I did a good job," "I will be quiet," "I will sit quietly," "I will do my work," "I will sit quietly," and "I will stop tapping," as referenced in the table below. The video then asked the child, "How does the teacher feel?" The baseline consisted of the child's organic answers to the question, seen in the table below. After baseline information was collected the video-modeling therapy was introduced to the child during their typical speech-language therapy sessions.

The video-modeling therapy was implemented by a graduate student clinician. The self video model consisted of a video of the teacher showing an emotion. A voice then said "How does the teacher feel?" After a brief pause, the video showed Bobby answering the question with the correct answer. After the video self model therapy was implemented for three sessions, posttest data was collected. Posttest data was collected based on Bobby's answers to the question "How does the teacher feel?" without the video model answer. The pre-test and post-test data were compared in the table below to determine if and how much the child's interpretation of body language and emotions improved.

Results

Data Collection Sheet

Name of Student: Bobby

Target Behavior: Body Language & Tone of Voice

Video Clip/ Target Response	Bobby's Response	Correct/ Incorrect	Use of Prompting
<i>Pretest</i>			
Clip 1 "I did a good job"	"Happy"	Incorrect	Yes, "Happy or mad"
Clip 2 "I will be quiet"	" Quiet, calm down"	Correct	Yes, repeat video clip
Clip 3 " I will sit quietly"	"Happy with you, not mad"	Incorrect	No
Clip 4 "I will do my work"	"Quiet"	Incorrect	Yes, repeat video clip
Clip 5 "I will sit quietly"	"Mad at you she's mad at you"	Incorrect	Yes , repeat video clip
Clip 6 "I will stop tapping"	"Stop tapping my pen"	Correct	No
<i>Posttest</i>			
Clip 1 "I did a good job"	"Happy with what I'm doing"	Correct	Yes "Happy or mad"
Clip 2 "I will be quiet"	"That means quiet"	Correct	No
Clip 3 " I will sit quietly"	"Stop tapping, stop flicking, stop running outside"	Correct*	No
Clip 4 "I will do my work"	"She wants you to work"	Correct	Yes, repeat video clip
Clip 5 "I will sit quietly"	"I will sit quietly and do my work"	Correct	No
Clip 6 "I will stop tapping"	"To do my work, stop tapping"	Correct	No

*Basic concept was understood

Data were collected during each therapy session by the graduate student clinician. The graduate student clinician recorded the child's response to the video model after each clip in the video model. A total of six clips were shown to Bobby and his responses were tallied.

During the pre-testing, Bobby answered questions related to understanding body language and tone of voice correctly for two out of six clips, as shown in the table above. Bobby needed prompting for four of the clips due to no response elicited. The prompting consisted of replaying the video for three of the clips and providing a closed set of options for one clip when Bobby would not provide any verbal answer.

Post test data showed that Bobby answered correctly for five out of six of the video clips without prompting. For the first clip in the post test, Bobby answered correctly with prompting. The prompting consisted of giving Bobby options of happy or sad because Bobby did not provide any verbal answer.

In conclusion, the use of video modeling increased Bobby's ability to identify the teacher's facial expression, body language, and tone of voice without prompting from pretest to posttest. The percentage increase was 50%. Throughout the therapy frequency and type of prompting was reduced. During the baseline, the video clip was needed to be replayed for three of the clips. In the posttest there was no need for repetition of the video clips.

Discussion

The results of the study confirmed video self modeling can be used to increase a child with ASD's ability to identifying body language, tone of voice, and facial expression. This is consistent with the findings of Charlop-Christy in 2000 that showed video modeling was effective for children with ASD (Corbett, 2003). This is also consistent with the findings from Bellini Akullian (2007).

Limitations of the Study

However, there are several limitations for this study. One limitation of this study was that it did not test the generalization of the learned receptive skills. There was no observation of the child responding to the behavior in the video clips in his classroom after therapy was administered. Additionally, only one of the child's teachers was featured in the video model and generalization was not tested among other teachers. Limitations also include the small sample size and the lack of gender diversity.

In order to address the limitations of the study, further research is necessary. For future research studies, it is recommended to use more than one teacher as the model to enhance generalization. It is also recommended to complete a study with more participants, using both males and females. Additionally to address limitations, the age range of participants should be increased. Furthermore, future studies should evaluate the effectiveness of video self modeling for children with ASD with a diagnosis of co-morbid disorder.

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