The Pennsylvania State University

The Graduate School

College of Education

STUDIES OF VIDEO MODELING INTERVENTION FOR CHILDREN WITH AUTISM: A REVIEW

A Thesis in

Special Education

by

Alaa Alturkistany

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Science

May 2014

The thesis of Alaa Alturkistany was reviewed and approved* by the following:

Kathy L. Ruhl
Professor of Special Education
Thesis Adviser

Sarah N. Douglas
Assistant Professor of Special Education

Richard M. Kubina, Jr
Program Coordinator

*Signatures are on file in the Graduate School

ABSTRACT

The purpose of this literature review is to examine the effectiveness of video modeling interventions for children with Autism Spectrum Disorders (ASD). Nine studies published between 2000 and 2013 met the inclusion criteria for this review. Two forms of video modeling were reviewed in this study: adult/peer modeling and self-modeling. The findings suggest that video modeling has been used to promote skills acquisition and these skills were generalized across settings and maintained over time. Descriptive summaries and outcomes for each study are provided, as well as suggestion for future research and implication for practitioners.

TABLE OF CONTENTS

Introduction

Autism is a developmental disability that is characterized by difficulties in social interactions, lack of verbal and non-verbal communication, and repetitive behaviors (U.S. Department of Education, 2001). Teachers working with children with Autism face a lot of challenges trying to find an effective method that meets the need of students with Autism. One effective method to help children with Autism to learn new skills is modeling the targeted skills for them by using visual stimuli (Wert & Neisworth, 2003).

Albert Bandura introduced the concept of modeling in observational learning a long time ago in his theory of social learning. Bandura (1977) found that children learn better from observing a model performing a skill. Skills that children learned from observing were generalized to other settings; however, according to Bandura, observational learning cannot be established without learner attention and motivation. Advances in technology encouraged researchers to build on the concept of observational learning and use video modeling to teach children with Autism various skills (Buggey, Hoomes, Sherberger, & Williams, 2011).

Video modeling intervention is a strategy that involves the learner watching a video of the target behavior preformed by another motivated (adult/peer) or by the learner him/her self and then receive an opportunity for the learner to complete the behavior. Researchers Sherer et al. (2001) claim that video modeling may be an effective intervention because it minimizes language the children need to hear, does not require a lot of attention (the child must only look at screen), avoids social interaction, and enhances motivation because most children with Autism enjoy watching video modalities such as television. Furthermore, the effectiveness of video modeling on children with Autism has been attributed to the fact that

this population is characteristically strong as visual learners and they can process visual information faster than verbal information (Pierce & Schreibman, 1994). It also provides a way to learn without the face-to-face interaction, which can be challenging for children with Autism. Several researchers have also claimed that video modeling has a positive impact on learners because the amount of irrelevant stimuli can be reduced increasing the possibility of students focusing on the relevant cues, which promotes learning (Charlop-Cheristy, Le, Freeman, 2000).

The use of a model in video intervention has varied, using others (peer/adult) or self as models. The majority of studies using video modeling employed another as model (Sherer et al., 2001). When using others as model researchers Buggey et al., 2011, suggested that an effective model is the one that is closer to the age of the observer, shares similar characteristics (gender, personality, and mood), and who functions a little higher than the observer level. Video self modeling helps children with Autism to see themselves as being capable to perform a task independently by showing them video of themselves performing the target skill successfully, which increase their self-efficacy. In a study by Bandura (2001), he reports that visual evidence of accomplishing a task is a critical factor in learning and performance.

Video modeling (peer, adult, or self as model) has been used with different populations to teach different skills. These skills include social skills, communication, functional skills, athletic performance, vocational skills, and emotional regulation (Hitchcock, Dowrick, & Prater, 2003). For children with Autism the number of research studies on the effectiveness of video modeling is starting to rise (Simpson, 2005). Video modeling has been proven to be effective in generalizing skills across settings and

maintaining the new skills after the intervention is over (Hitchcock et al., 2003), which is important because children with Autism have difficulties transferring skills from one setting to another.

Because video modeling has shown promise as a teaching tool, and because video production is made easier by advances in video technology (e.g. camera in iPads) it is important to review studies conducted with school-age learners. Therefore, the purpose of this review is to examine the outcomes of studies that used Video-modeling intervention for school-aged children with Autism. The research questions were as follows:

1. Which type of video modeling (adult/peer modeling or self as model) was used most in research studies?
2. What are the targeted skill areas?
3. How effective is video modeling intervention for enhancing the targeted skills?

Method

The studies included in this review were located by searching the Educational Resources Information (ERIC) database and Psych INFO from 2000 to 2013. The reason for looking at articles in this time period is because technology has become an essential part in education and it is more affordable and doable than before. Researchers now can use their personal computers or mobile phone to record a video and edit the clip. In the past, researchers needed specialized equipment and a professional's help was needed to edit the video. The descriptors used to identify articles were as follows: Autism, Autism spectrum disorder, ASD, video intervention, video modeling, video self-modeling, and VSM. Articles from the electronic database search were included in the review if they met each of the following criteria:

1. Articles were published in a peer-reviewed journal between 2000 and 2013.
2. Participants were school-aged children, with ages ranging from 3-18 years.
3. Participants were diagnosed with Autism.
4. Video modeling was used as the independent variable.

The search procedures resulted in identification of 9 studies that met the inclusion criteria for this review.

Results

Participants' Characteristics and Study Settings

A total of 7 female and 25 male individuals identified as having Autism participated in the nine studies reviewed (N = 32). Participants ranged in age from 3 to 13 years, with more than half of the participants being under 7 years of age. Four participants were identified as being in the severe Autistic range and 9 were identified as having low language ability. No information other than the students qualified as Autistic was provided about the remaining 16 participants.

Two studies (Apple, Billingsley, & Schwartz, 2005; Buggey et al., 2011) were conducted in an integrated preschool classroom. Four studies (LeBlanc et al., 2003; Rayner, 2011; Shipley-Benamou, Lutzker, & Taubman, 2002; Wert & Neisworth, 2003) occurred in an assessment classroom in a public school (the room contained a child sized chair, a small table, an adult sized chair, and a toy/supply cupboard). Three studies (Canella-Malone et al., 2011; Nikopoulos, Canavan, & Nikopoulou-Smyrni, 2009; Rayner, 2010) were preformed in a school for students with disabilities. One of these three studies (Nikopoulos et al., 2009), having three participants, was conducted in two different settings. Two participants were exposed to the intervention in a special education, self-contained classroom and the third student received treatment in an after-school program in a specialized school for children with disabilities.

Independent Variable: Video Modeling

Two forms of video modeling were studied, adult/peer modeling and self-modeling. The majority of studies examined use of adult/ peer video modeling. Two studies (Buggey et al., 2011; Wert & Neisworth, 2003) evaluated video self-modeling and in a study by Canella-Malone et al., (2011), video prompting was compared to video modeling.

Adult/Peer Modeling. In this approach to video modeling, an adult or peer is recorded while demonstrating the targeted skill or behavior. The learners are then asked to watch the video so they can imitate the behavior of the model when they are provided the opportunity to perform the task. Seven of the studies used this approach of modeling.

Researchers in Rayner (2011) used both adult and peer models in their study to teach the students the same daily living skill (i.e. how to tie a shoelace knot). In this study 4 videos were produced. An adult who was unfamiliar to the learner served as the model. The video opened with a title slide text and continued by showing the model from the performer's perspective (i.e. only the hands of the model were shown). Peers who were the same age and gender as the participant students served as models in the remaining 3 videos. Each video was 2 minutes and 24 seconds long. A video prompting procedure in which the video was paused after each step to give the chance to the participant to preform the step was used in this study.

In four studies, researchers used only an adult as the model (Cannelle-Malone et al., 2011; LeBlanc et al., 2003; Rayner, 2010; Shipley-Benamou et al., 2002). All researchers but LeBlanc et al. (2003) targeted daily living skills. LeBlanc et al. (2003) targeted a behavior identified as perspective taking. In the other three studies the model was the study author who was unfamiliar to the participants and videos were recorded from the performer's perspective. There were opening and closing screens with texts in all of the videos (e.g. let's brush our teeth, we have just brushed our teeth). Symbols like those used in the student's classroom were added to the videos in Rayners (2010) so it may be easier to prompt the students after fading the videos. The duration for each of these videos ranged from 5 seconds - 2 minutes 18 seconds long. In the LeBlanc et al. (2003) study, the child viewed a video of an adult completing a task. The task was a scenario preformed by using common animal puppets (e.g., Barney, cookie monster) hiding an

object under a bowl then the puppet left. The adult model was asked where could the puppet find the hidden object. The model explained the strategy he/she used to answer that question. After the participants viewed the video they had to respond to questions. Correct responses resulted in praise and incorrect response resulted in replaying the video and a prompt to encourage the child to pay attention. The students had to make three correct responses in order to be tested on the task.

Researchers in two studies used peer models (Apple et al., 2005; Nikopoulos, 2009). The models in these studies were familiar peers who had positive relationships with the participants. The video was not recorded from the models' perspective. After participants watched the video the experimenter turned it off and gave the participants the opportunity to exhibit the behavior. The targeted behaviors were giving complements and reducing challenging behaviors. The duration of the videos ranged from 30 seconds – 15 minutes. The participants watched the video for reducing the challenging behavior only once. In the compliment-giving study there were four videos. Three videos were about response and one video was about initiating a compliment. Participants watched the videos three times per week. They watched one of the three response segments and the initiation video segment.

Self as Model. This approach involves using the participant with Autism as the model in the video. When recording the video only the target skill would be viewed. The resulting video then presented the behavior through the eyes of the learner. In order to accomplish this the participants were recorded over time performing the skills then the video was edited to cut unwanted parts. Two groups of researchers Buggey, Hoomes, Sherberger, and Williams (2011) and Wert and Neisworth (2003) studied this procedure in their work. The target behavior in Buggey et al. (2011) is social initiation. The participants watched the video 1-hour prior to recess

for 1 week. Wert and Neisworth (2003) targeted spontaneous requesting; however, the study did not mention how many times the students had to watch the video. The video duration was 2.5 – 5 minutes long.

Comparison Study: Video Modeling VS. Video Prompting. Canella-Malone et al. (2011) compared use of video prompting with video modeling for teaching seven students with Autism to do laundry and wash dishes. To create the video prompts, task analyses were used to divide the targeted skills into steps. The models in these videos were adults unfamiliar to the learner. Separate video clips were filmed and each clip showed only one step of the task. Students watched one clip and were immediately given the chance to perform that step. In the video-modeling version, the students watched a single video showing all the steps of how to perform the targeted skill then they were given the chance to perform the task. The same steps in video prompting were used in video modeling and the students heard the instructor's voice in the video. In video prompting for laundry, the average duration of each video clip was 7.1 seconds. For washing the dishes, the average duration of each clip was 5.1 seconds. In addition to demonstrating the actions required for completing the steps, each video clip included a one-sentence voice-over instruction. All videos were recorded from the performer's perspective. For the video modeling version: the duration for the Laundry video was 2 minutes 18 seconds and the duration for washing the dishes video was 1 minute 55 seconds.

Use of Reinforcement and Prompting

Reinforcement and prompting were used in three studies (Apple et al., 2005; Buggey et al., 2011; Wert & Neisworth 2003). The targeted behaviors in these studies were social skills: compliment giving, social initiation, and spontaneous request. After the participants watched the

video, the teacher made up a situation where the participants needed to respond with a social interaction. If the students successfully initiated a social response their reinforcer was social praise or they were able to play with a favorite toy. In the other six studies, after watching the video, the participants were given the opportunity to complete the target behavior. Verbal and sign prompts were often provided if the participant did not initiate the steps of the target behavior. Two of these studies (LeBlanc et al., 2003; Shipley-Benamou et al., 2002) provided reinforcement in the form of stickers, edible items, and battery-operated toys when students performed the target behavior independently.

Targeted Skill Areas

Three general areas were targeted for change in the reviewed studies. These areas included functional living skills, social communicative behaviors, and perspective taking skills. Many of these skills were identified with input from significant adults in the participants' lives or were reported by researchers as being socially valid.

Functional living skills were targeted in 5 investigations. Shipley-Benamou, Lutzker, and Taubman (2002) used video modeling to teach young children different skills such as making orange juice, preparing a letter to be mailed, setting the table, cleaning a fish bowl, and feeding a cat. The parents of the participating children were given a list of behavioral skills and they were given the choice to choose three skills that they thought their children needed to learn. Rayner (2010) taught the participant in the study how to unpack his bag and how to brush his teeth. The participant's parents and teachers selected this target behavior. In a second study by Rayner (2011) participants were taught how to tie their shoelaces. Teachers of the participants reported that it is important to know how to tie their shoelaces in terms of social acceptance. Cannella-Malone et al. (2011) taught students skills like doing laundry and washing dishes. They targeted

these skills so the participants can take control over their lives and live independently. Nikopoulos, Canavan, and Nikopoulou-Smyrni (2009) used video modeling to enhance instructional stimulus control over a simple behavior (cleaning up a toy) to reduce challenging and aggressive behaviors. The researchers examined the effect of video modeling on terminating the target behavior because simple requests like "put the toy away" had not resulted in the desired behavior and only made the situation worse.

Social communicative behaviors were the focus of three investigations. These behaviors included compliment giving (Apple, Billingsley, & Schwartz, 2005), physical and social initiation (Buggey et al., 2011), and spontaneous requesting (Wert, & Neisworth, 2003). Researchers in two of these studies (Apple et al., 2005; Buggey et al., 2011) examined the participants' performance with non-disabled peers in a school setting. In one study by Wert and Neisworth (2003) it was not clear whether the participants' communicative partners were with or without disability in the study.

Perspective taking skills were the focus of one study conducted by LeBlanc et al. (2003). Perspective taking refers to the ability to empathize with someone else and see things from their perspective.

Measurement of Dependent Variables

Several different forms of measure were evident in the studies. For example, latency, accuracy, and event/frequency recording were used to measure the change in the participant behavior after intervention. Researchers in four studies used observational recording systems to measure the frequency of specific student behavior (Apple et al., 2005; Buggey et al., 2011; Rayner, 2011; Wert & Neisworth, 2003). The observers in all 4 studies counted the frequency of the behavior. In the study by Apple et al. (2005) the teacher observed and recorded the

participants making compliments. Four observers (the primary author who is a university professor, two graduate assistants, and an undergraduate honors students in physical therapy) observed the experiment in Buggey et al. (2011). In Rayner (2011) the author and a second observer observed the student tying the shoelace. In the study by Wert and Neisworth (2003), adult prompters (familiar to the participants and the family) who were behavior therapists counted the opportunities and were the observers for the study.

Researchers in three studies reported percentage of steps completed correctly and independently (Canella-Malone et al., 2011; Rayner, 2010; Shipley-Benamou et al., 2002). The observers in the study by Canella-Malone et al. (2011) were graduate students in special education who were trained to collect data. The trainer and reliability observer completed the task analysis sheets based upon the skill being taught. In the study by Rayner (2011), the task analysis was filled by the author and school staff, two teachers and two paraeducators, observed for the study. Trained observers in the study by Shipley-Benamou et al. (2002) recorded the steps completed for each task. Sessions were recorded then observed at a later time by the observer.

Researchers in one study calculated the latency to initiate the appropriate motor behavior in response to the experimenter's prompt. No information about the observer of the study (Nikopoulos et al., 2009) was provided. In one study, researchers recorded accurate student answers about the hidden object in the scenario as pass and non-accurate answers as a fail (LeBlanc et al., 2003). A school staff member and a second observer administrated the experiment. The information about who recorded the student answer was not available.

Research design. Single subject design has been the most commonly used design for conducting video modeling intervention. Of the nine studies, seven used multiple baseline

designs, whereas only two (Canella-Malone et al., 2011; Rayner, 2011) combined a multiple baseline across participants design with alternating treatment design.

Inter-observer Agreement. All of the nine studies included in the review reported explicit measures of inter-observer agreement or reliability with ranges between 90%-100%. Inter-observer agreement was calculated across all phases for each participant. Agreement between the observers was calculated by taking the number of agreements between the independent observers and dividing by the total number of agreements plus disagreements, multiplied by 100.

Effectiveness of Video Modeling Interventions

Overall, data in all 9 studies reviewed provided clear evidence that video modeling interventions were related to positive outcomes in functional living skills, social communicative behaviors, and perspective taking skills. However, four-research teams (Buggey et al., 2011; Canella-Malone et al., 2011; LeBlanc et al., 2003; Rayner, 2010) reported mixed results. Video modeling intervention in three of these studies was effective with some of the participants and ineffective with others. In one study (Rayner, 2010) video modeling resulted in a positive outcome for one functional skill (unpacking the bag) but results were limited on a different functional skill (brushing teeth) with the same participant. Rayner attributed the differences to the difficulties of the motor skill requirements of the behavior.

Maintenance. Maintenance was assessed and positive results were reported in six of the studies (Apple et al., 2005; Buggey et al., 2011; LeBlanc et al., 2003; Nikopoulos et al., 2009; Rayner, 2010; Shipley-Benamou et al., 2002). The maintenance data were collected for brief periods of time (e.g., 2 days) and for long periods of time (e.g., 2 years). In some studies maintenance data were collected immediately after the video intervention was withdrawn. One

research team Buggey et al. (2011) moved the children directly to maintenance if a strong and consistent change was shown in their behavior. Another research team Apple et al. (2005) started collecting maintenance data after removing the reinforcement. Researchers reported positive findings of short or long period maintenance in five of these studies but the results were mixed in one study (Buggey et al., 2011).

Generalization. Five of the studies assessed generalization of treatment effects; however, none of these studies reported whether it was long or short-term generalization (Apple et al., 2005; LeBlanc et al., 2003; Nikopoulous et al., 2009; Rayner, 2010; Shipley-Benamou et al., 2002). In one study, the research team (Wert & Neisworth, 2003) used video intervention at home and later they observed positive effects of the intervention not only at home but even at school. Generalization across settings was assessed in two studies by research teams (Apple et al., 2005; Shipley-Benamou et al., 2002), and positive results were reported. Two-research teams (LeBlanc et al., 2003; Nikopoulos et al., 2009) assessed generalization across material and the results were positive. In one study by Rayner (2010) the target behavior (unpacking the bag) was generalized (to packing the bag); however, generalization was not effective with the other target behaviors. These results imply that video modeling intervention may result in demonstration of generalization of functional living skills, social communicative behaviors, and perspective taking skills.

Discussion

The purpose of this review was to investigate the effect of video modeling intervention as a method to improve the performance of students with Autism. The findings suggest that the most studied form of video modeling is adult/peer modeling. Furthermore, video-modeling intervention is an effective strategy for teaching functional living skills, social communicative behaviors, and perspective taking skills. Results indicate that skills that are taught through video modeling are maintained over time and generalized across materials, settings, and behaviors. Autism learners face a lot of challenges when they try to generalize learned skills, so this is an important finding because Autism learners need an intervention that can aid generalization so they can demonstrate behaviors and skills in one setting and also in different settings. However, the identification of only 9 studies meeting the review criteria indicates a need for more research to evaluate the use of video modeling with children with Autism.

The effectiveness of video modeling intervention for children with Autism can be accredited to the fact the video modeling intervention is based on visually cued instruction and modeling which are the most effective methods to use for teaching children with Autism (Sherer et al., 2001). In his theory, Observational Learning, Bandura (1977) proved that children learn better from modeling. Another reason behind the success of video modeling intervention is that video modeling reduces anxiety that is related to social interaction that children with Autism exhibit when a live model has been used (Bellini, 2004). One of the characteristics of children with Autism is lack of social interaction; video modeling reduces face-to-face interaction thereby enabling children with Autism to attend to the relevant stimuli closely.

The success that was obtained from video modeling could be attributed to the length of the video (e.g., 2 minutes and 15 seconds long), variety in settings (the place where intervention

took place), and the number of times the video was viewed. The length of the videos in the reviewed studies was affected by the complexity of the target behavior (e.g. making orange juice, unpacking the bag, washing dishes, and giving compliment). Researchers of the reviewed studies tried to eliminate irrelevant stimulus in the videos to make videos as short and simple as much as possible to gain the participant's attention. According to research team Charlop-Cheristy et al. (2000) video-modeling intervention has a positive impact on learner because it helps students focus on relevant cues that promote learning by reducing irrelevant stimulus. Future research needs to investigate the effects of these different factors on the intervention.

The key success for video modeling intervention is motivation and attention. Children who do not want to watch the video or who do not want to exhibit the behavior cannot benefit from the intervention. Bandura proposed that (1977) attention and motivation are essential to observational learning. In order for the students to imitate the behavior of the model they need to be able to pay attention and enjoy watching the video. Students with Autism can be distracted from anything that's irrelevant to the purpose of the video. The ability to edit the video and remove irrelevant stimuli enables researchers to help students focus on the targeted skill or behavior and maximize students' attention (Charlop-Christy et al., 2000).

Results from studies indicate that video modeling appears to enhance children's motivation to watch and learn from the video. Reinforcement and prompting were only used to motivate the students to exhibit the target behavior. Even though attending the video was not measured in the studies, the experimenters did not report any difficulties encouraging the children to watch the videos. The reason behind that according to research team Pierce et al. (1997) is that watching the video does not require a lot of attention (just looking at the screen) and the language in the video is minimized as much as possible. Future research needs to

investigate the ability to reduce adult supervision because watching the video is naturally reinforced (Sherer et al., 2001) which means that the children are highly motivated to watch the video.

In this review, researchers reported that the majority of the participants enjoyed watching video, which increased the possibility of positive outcomes. However, that is not the case with all children with Autism. According to Nikopulous and Keenan (2003), some students with challenging behaviors may not benefit from video intervention because they have difficulty imitating skills. Another research team (Sherer et al., 2001) reported that children with high visual learning skills were the one who benefited the most from video intervention. Future research is needed to examine the effect of video modeling intervention on different children with Autism.

Another factor that may have the potential to affect the outcomes of video modeling is the attributes of the video (e.g. voice narrating, prompts). Two research teams, Apple et al., (2005) and Shipley-Benamou et al., (2002) used voice narration to explain the steps that need to be performed by the model to facilitate initial attending to the video. The narrator's voice was heard from the video explaining what the model will perform and the steps of the targeted behavior. LeBlanc et al., used zoom on video footage to focus on relevant visual cues. The focus on the visual cues was used to direct student attention to the clue so the student can predict the answer (e.g. zoom in on footprints of the puppet to know where the puppet hid). Rayner (2010) used visual symbols like the one used in the classroom to prompt the child after fading the video. These attributes may have impacted the outcomes of the studies because they were used to make the students focus on the targeted behavior. Researchers in the studies did not address the effect of these factors on the intervention. Future research may compare these attributes such as; the

narrator language, the zoom in video footage, and symbol use in the videos and their effects on the intervention.

The findings from the studies in this review suggest that using adult/ peer model may be as effective as using self-model. However, adult/ peer modeling was used in the majority of the studies and no comparison of the two was conducted. Researchers in a study (Sherer et al., 2001) claimed that it is easier to videotape a typical developing peer (or adult) than video taping a child with a disability. In order to videotape a child with a disability, the child needs to perform the desired task and that it hard because we would assume that the child is not proficient in the skill and the child will require many prompts to complete the task. Then the video needs to be edited to remove all the voices and people who were trying to help the child cooperate in the task. However, researchers claimed that self-modeling was more effective than adult/peer modeling in some targeted behaviors like: engaging in less hyperactive behavior (Dowrick & Raeburn, 1977), decreasing stuttering (Bray & Kehle, 1996), and decreasing compulsive restoration (Bline, 1997). Using self as a model can be more effective in some areas than using another as a model because it can increase self-efficacy. Bandura (1997) indicated that when an individual sees oneself performing a skill successfully it can motivate the individual to learn the skill because of the effect of seeing oneself succeed in it.

One other result should be measured. None of the reviewed studies included children over the age of 13. Adolescents may respond particularly well to video modeling of a peer. It is possible that learners older than 13 may also benefit from video modeling and this is an area that seems worthy of study.

Limitation and Recommendation for Future Research

The first limitation in this review is that most of the studies reviewed used a small number of participants, which can produce misleading results. The small number of participants was because programs for children with Autism are highly individualized which makes it hard to find a big group learning the same skill. In order to improve the quality of the research; future research needs to investigate the efficacy of video modeling intervention using a large number of participants. In this literature review 7 of 9 studies had fewer than 5 participants.

Another limitation is that some of the studies of video-modeling intervention were paired with reinforcement, which could be the reason behind its effectiveness. Future research needs to separate this variable in order to determine the effect of video modeling intervention without the use of extrinsic reinforcement. In some studies duration of the follow up phase was short (it was right after the intervention was done). Future research needs to extend the time between video interventions and follow up.

Researchers in video modeling intervention for children with autism have been focusing mainly on three target skill areas. These skill areas are: social communicative behaviors, functional living skills, and perspective taking skills. Focusing on these areas is beneficial because it deals with some of the characteristics of Autism, which are: lack of verbal communication, resistance to environmental changes, and engaging in challenging behavior.

Applications of modeling to academic skills might also be done. Researchers investigated the effect of video self-modeling on academic performance in a school setting for students with disabilities and the outcome for this intervention was positive (Hitchcick,

Dorwrick, & Prater, 2003). Future research needs to investigate the effect of video modeling intervention for children with Autism in academic skills (e.g. math and reading). For example, video self-modeling can be used so that the learners can see themselves solving a math problem accurately and independently. In math, the teacher can use the video self model technique to record the child counting napkins while setting the table then ask how many napkins are there and how many is it going to be if he/she put two more napkins. The video can be used as a guide the children can watch before they are presented with a similar math problem. For reading, the teacher could video record the child with Autism reading a passage fluently (they have been practicing to read before). If the child had trouble while reading, the teacher can prompt the child. After recording the video, the teacher will edit the video and remove the parts where the teacher prompted the student. Every day at the beginning of the reading or math session the child will watch these self-model video to reinforce the child image of success with the target skill which is built on the idea of Bandura's self efficacy (Bandura, 1997).

Implications for Practice:

Several points can be taken from this body of research and are relevant for practice:

- Video modeling intervention can be successfully used with school age children ranging from preschool to middle school. In order to benefit the most from this intervention the children need to be able to watch the videotape without exhibiting challenging behaviors.
- The effect of video modeling can be expected to generalize to other activities, settings, and people.
- Skills learned through video modeling are maintained. Because videotapes are portable, they can be played at home and over school breaks to enhance skill maintenance.

- Video intervention is effective when it's connected to a reward system or social and verbal praise to motivate students to exhibit the new behavior. Reinforcement should be planned as part of a video-modeling program.
- Video modeling intervention is demonstrated effective in teaching children with Autism social skills, daily living skills, and in reducing challenging behavior. The use of others as a model may be easier than using self as a model; however, self-modeling may be more effective in some behaviors.
- Video modeling is time and cost efficient. Modern technology makes it easy to create and edit a video using readily available and low cost applications.
- Video modeling interventions help students focus on the targeted skill or behavior by removing irrelevant stimuli. When creating videos, teachers should edit out distracting stimuli.

Conclusion

Video modeling using others as the model has been the most often studied form but video modeling using the child also shows promise. Video modeling research has targeted three skill areas functional living skills, social communicative behaviors, and perspective taking skills but it may be appropriate to expend into more research application for academic skills. Until such studies are conducted and replicated it is prudent to conclude that video modeling intervention is a fast and effective tool for teaching children with Autism new skills. Personal computers now are equipped with cameras and software that make recording and editing the video less challenging than before. Portable video players (laptop, iPod) allow students to access the videos

whenever they need which helps maintaining the new skill they learned. Video modeling is a promising practice teachers can implement with some confidence.

References

Apple, A., Billingsley, F., & Schwartz, I. S. (2005). Effects of video modeling alone and with self-management on compliment-giving behaviors of children with high-functioning ASD. *Journal of Positive Behavior Interventions, 7*(1), 33-46. Retrieved from http://search.proquest.com/docview/218780372?accountid=13158

Bandura, A. (1977). *Social learning theory.* Englewood Cliffs, NJ: Prentice-Hall.

Bandura, A. (1997). *Self-Efficacy: The Exercise of Control.* New york: Free-man.

Bandura, A. (2001) Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1-26.

Bellini, S. (2004). Social skill deficits and anxiety in high functioning adolescents with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities*, 19(2), 78-86.

Bline, C. (1997). Restorative behaviors in autism: Experimental analysis and video self-modeling treatment, Dissertation Abstracts International, 57, 7248-B.

Bray, M.A., & Kehle, T.J. (1996). Self-modeling as an intervention for stuttering. School psychology Review, 25, 358-369.

Buggey, T., Hoomes, G., Sherberger, M. E., & Williams, S. (2011). Facilitating social initiations of preschoolers with autism spectrum disorders using video self-modeling. *Focus on Autism and Other Developmental Disabilities, 26*(1), 25-36. doi:http://dx.doi.org/10.1177/1088357609344430

Cannella-Malone, H., Fleming, C., Chung, Y., Wheeler, G. M., Basbagill, A. R., & Singh, A. H. (2011). Teaching daily living skills to seven individuals with severe intellectual disabilities: A comparison of video prompting to video

modeling. *Journal of Positive Behavior Interventions, 13*(3), 144-153. doi:http://dx.doi.org/10.1177/1098300710366593

Charlop-Cheristy, M. H., Le, L & Freeman, K. A. (2000). A comparison of video modeling with in vivo modeling for teaching children with autism. *Journal of Autism and Developmental Disorders,* 30, 537-552

Dowrick, P. W., & Raeburn, J. M., (1977). Video editing and medication to produce a therapeutic self-model.

Hitchock, C., Dowrick, P. W., & Prater, M. A. (2003). Video self-modeling interventions in school-based settings: A review. *Remedial and Special education*, 24, 36-46.

LeBlanc, L. A., Coates, A. M., Daneshvar, S., Charlop-Christy, M., Morris, C., & Lancaster, B. M. (2003). Using video modeling and reinforcement to teach perspective-taking skills to children with autism. *Journal of Applied Behavior Analysis, 36*(2), 253-257. doi:http://dx.doi.org/10.1901/jaba.2003.36-253

Nikopoulos, C. K., Canavan, C., & Nikopoulou-Smyrni, P. (2009). Generalized effects of video modeling on establishing instructional stimulus control in children with autism: Results of a preliminary study. *Journal of Positive Behavior Interventions, 11*(4), 198-207. Retrieved from http://search.proquest.com/docview/61839030?accountid=13158

Pierce, K., & Schreibman, L. (1994). Teaching daily living skills to children with autism in unsupervised settings through pictorial self-management. *Journal of Applied Behavior Analysis,* 27, 471-481.

Pierce, K., Glad, K., & Schreibman, L. (1997). Social perception in children with autism: An attentional deficit? *Journal of Autism and Developmental Disorders*, 27, 265-

282.

Rayner, C. S. (2010). Video-modelling to improve task completion in a child with autism. *Developmental Neurorehabilitation,13*(3), 225-230. doi:http://dx.doi.org/10.3109/17518421003801489

Rayner, C. (2011). Teaching students with autism to tie a shoelace knot using video prompting and backward chaining. *Developmental Neurorehabilitation. 14*(6), 339-347. doi: 10.3109/17518423.2011.606508

Sherer, M., Pierce, K.L., Paredes, S., Kisacky, K. L., Ingersoll, B., & Schrelbman, L. (2001). Enhancing conversation skills in children with autism via technology: which is better, "self" or "other" as a model? behavior modification, 25(1140158), 140-158. doi: 10. 1177/0145445501251008

Shipley-Benamou, R., Lutzker, J. R., & Taubman, M. (2002). Teaching daily living skills to children with autism through instructional video modeling. *Journal of Positive Behavior Interventions, 4*(3), 166-177. doi:http://dx.doi.org/10.1177/10983007020040030501

Simpson, R. L., (2005). Evidence-based practices and students with autism spectrum disorders. *Focus on Autism and Other Developmental Disorders*, 20(3), 140-149.

Wert, B. Y., & Neisworth, J. T. (2003). Effects of video self-modeling on spontaneous requesting in children with autism. *Journal of Positive Behavior Interventions, 5*(1), 30-34. doi:http://dx.doi.org/10.1177/10983007030050010501