

THE EFFECTIVENESS OF VIDEO SELF-MODELING TO TEACH PLAY AND ADAPTIVE SKILLS TO A  
YOUNG PRESCHOOLER WITH DEVELOPMENTAL DISABILITIES

By

Deidra Love

Tom Buggey  
Professor of Education  
(Chair)

Robin A. McWilliam  
Professor of Education  
Siskin Children's Institute, Research Chair  
(Committee Member)

Kim Wingate  
Professor of Education  
(Committee Member)

THE EFFECTIVENESS OF VIDEO SELF-MODELING TO TEACH PLAY AND ADAPTIVE SKILLS TO A  
YOUNG PRESCHOOLER WITH DEVELOPMENTAL DISABILITIES

By

Deidra Love

A Thesis Submitted to the Faculty of the University of  
Tennessee at Chattanooga in Partial Fulfillment  
of the Requirements of the Degree of  
Master of Education

The University of Tennessee at Chattanooga  
Chattanooga, TN

May 2014

## ABSTRACT

Video self-modeling (VSM) has been used successfully to teach play and communication skills to children with autism over age 4. Research has demonstrated a need to evaluate the effectiveness of VSM with younger children, as well as to assess which types of behaviors/skills can be taught through VSM. Two videos were recorded and edited to demonstrate a three year old child with developmental delay (at risk for ADHD) performing tasks during play and meals with the goal of teaching him to roll a ball and sit in his chair for longer at family meals. Parents were responsible for implementing the VSM intervention as well as collecting data through video (with the author's support). Results demonstrated that VSM might have been successful to teach the child to take turns with his sister in ball play but did not consistently increase the amount of time he would sit in his chair during meals. Implications for practice of this intervention and need for further research with very young children are also discussed.

TABLE OF CONTENTS

ABSTRACT..... iii  
LIST OF FIGURES..... v

CHAPTER

I.INTRODUCTION..... 1

    Background Literature..... 1  
    Research Question ..... 7

II.METHODS..... 8

    Participant ..... 8  
    Setting ..... 8  
    Materials/Equipment ..... 8  
    Experimental Design..... 9  
    Procedures ..... 9  
    Data Collection/Inter-rater Agreement..... 11  
    Treatment Fidelity..... 12

III.RESULTS ..... 14

    Discussion..... 16  
    Limitations..... 19  
    Conclusion/Social Validity ..... 19

REFERENCES..... 21

APPENDIX

    A.DATA COLLECTION FORMS ..... 23  
    B.VSM FAMILY CHECKLIST..... 26

VITA..... 28

LIST OF FIGURES

1.0 Intervention Data.....15

## CHAPTER I

### INTRODUCTION

Learning through imitation is a crucial component of skill development for all young children. From their earliest weeks and months, infants will look intently into the faces of their caregivers, typically beginning to imitate social smiles by two months of age (Messinger & Vogel, 2007). Bandura's social learning theory (1977) emphasizes the importance of modeling as individuals acquire new skills, and many parents and caregivers of young children understand that repetition of sounds, gestures, and movements form the groundwork of learning for their child. However, children with autism, ADD/ADHD, and other developmental disabilities can struggle to connect with other people socially and may lack the interest or natural tendency to imitate those around them. Bellini (2004) explains that some people with ASD or other social/communicative disabilities experience stress and anxiety in social interactions, limiting their ability to imitate others. Also, although Bandura (1977) theorized that attention is imperative in order to imitate, children with disabilities or developmental delay may struggle to focus on a model, becoming easily distracted by irrelevant details around them (Koning & Magill-Evans, 2001). Thus, parents and caregivers need effective strategies to teach their young child who does not seem aware of the expressions, actions, or spoken words of others and who may struggle with imitation skills. The use of video technology, specifically video self-modeling, provides a promising intervention for these children and families.

#### Background Literature

For children with autism, ADHD, or other social/communication challenges, videos and screens seem to be particularly motivating in capturing and maintaining their attention, leading to the likelihood

of greater learning. Charlop-Cristy, Le, and Freeman (2000) discovered that video-modeling led children with autism to gain new skills in speaking and spontaneous greetings at a faster rate than live models, and Cardon and Azuma (2012) demonstrated that students with autism favored a two dimensional video of a puppet show as opposed to the live show using the exact same puppets. In addition, the anecdotal stories of people with autism such as Temple Grandin further illustrate reasons that video learning may be preferable to children and students with autism. In her book *Thinking in Pictures*, Grandin (2010) asserts that her understanding of words is dependent upon translating words into pictures in her mind. She explains the importance of being able to visually connect new information with images already established in her memory. Such studies and testimonials suggest that children with autism and similar challenges may learn more from video modeling of new skills rather than the real-life words and actions of the teachers and caregivers around them.

One form of video modeling rapidly gaining a strong research base is video self-modeling (VSM). VSM involves children viewing an edited video in which they perform a skill or desired behavior (Buggey 2009). Young children may watch this prepared video once per day prior to the routine/situation or as often as they request the video during the day. Dowrick (1983) defined two types of video self-modeling which may impact change in learning: feedforward and positive self-review. Feedforward demonstrates a person performing a new behavior or skill; however, it should be a skill that is within the child's scope and ability. Next, Dowrick suggests that positive self-review through video may increase the fluency or frequency of a skill the child can already perform. This promotes self-confidence and positive feelings about the target skill, leading to increased ability. Buggey states that some degree of editing will be required so that the video depicts the child performing at an advanced level. For example, a child's single words might be recorded and then grouped together, giving the appearance that the child is using

short sentences. Then, the child is able to view him/herself functioning in daily life using this “next step” skill.

This goal of VSM also coincides with Bandura’s (1977) theory, namely that people will make more progress toward attaining a skill if they truly believe they can do it. Bandura’s research also suggests that people are most likely to notice and imitate models who closely resemble themselves; therefore, video self-modeling may hold more promise to evoke change for young children than using adult and/or peer models because the child can most closely identify with him/herself. Likewise, Sherer et al. (2001) noted that VSM was most effective for children who seem to enjoy watching themselves on screen and who had demonstrated a preference for other types of visual learning in the past, such as TV or video viewing.

Several studies have demonstrated gains in language/communication and social skills through the use of VSM with preschool children. For example, Buggey (1995) found that three four-year old children with language delays showed increased use of “to be” verbs after watching edited videos of themselves. The preschoolers were asked to imitate short phrases using the verbs *is*, *am*, and *are*, and their best imitations were edited and compiled into a short video to be viewed by the children each morning. When the children were recorded later in the day during the natural routines of recess and lunch, Buggey found they used and generalized the new verb forms in these different settings.

Additionally, Litras, Moore, and Anderson (2010) studied the impact of using video self-modeled social stories to teach a 3-year 5-month old child with autism three different social behaviors of greeting, inviting to play, and contingent responding. Because the child’s vocalizations were often faint or mumbled, phrases spoken by a similar-aged peer were used in place of the child’s lines in the final video. All VSM recordings and viewings were conducted in the family’s home, and the parents rated the intervention method as effective in teaching their child to greet, invite others to play, and respond



contingently in social situations. Similar to other VSM studies, the authors recorded a significant increase of target behaviors even after the first viewing of the VSM movie, and social initiation and greeting behaviors not only increased but were also generalized to different peers as well as to the setting of his early intervention center. These were significant findings, particularly since this child was the youngest subject of any published VSM study to date. Finally, Litras, Moore, & Anderson proposed that the use of praise, prompting and other reinforcement within the video might have played a role in the increase of target skills for this child.

To study VSM in more naturalistic settings, Bellini, Akullian, and Hopf (2007) evaluated the effectiveness of VSM to increase social engagement for two young children with ASD in a preschool class. They emphasized the need to teach social skills through VSM with peers rather than adults and within a natural environment for young children (as opposed to sterile rooms in which children do not spend regular time). Therefore, the two boys with ASD were prompted by their teacher to initiate play with a peer through imitating a short phrase such as “play with me.” Clips of these play requests as well as natural play interactions were captured and compiled to create videos which portrayed the boys interacting frequently with peers. This study noted significant gains for both young boys (ages 4 and 5) over the course of watching videos of themselves in the classroom and playground settings and found that improved social engagement continued even after the VSM intervention was stopped. In contrast to the study of Litras, Moore, and Anderson, these authors felt it important to ensure no other intervention strategies were used so that VSM alone could be assessed. So, a unique element of this study was that no prompting or reinforcement of the target behavior was used so that the effectiveness of VSM alone for skill acquisition could be measured.

Knowing that poor imitation skills are common characteristics for children with ASD and ADD/ADHD, Cardon and Wilcox (2011) compared video modeling with Reciprocal Imitation Training (RIT) to

determine which method worked better to increase imitation skills during play sessions with six young children ages 20-48 months. RIT is an evidenced-based intervention method in which trained adults use verbal and physical prompting to teach children to imitate certain tasks which have been repeatedly modeled for them. The six children were divided into three intervention groups, with children in each pair having similar severity levels of ASD. Then, within each dyad, one child received RIT intervention while the other child participated in VSM. Although the RIT group showed steady increase of imitation throughout the study, all three children in the video modeling group demonstrated a sharp increase in frequency of imitation by their second viewing session. This rapid acquisition of skills is consistent with other video modeling studies (Buggey 2005, Charlop-Cristy et al. 2000, Litras, Moore, & Anderson 2010), and this project also provides important information regarding the effectiveness of video modeling with very young children (under age 4), which has not been well researched to this point.

Adding to the evidence base for the use of VSM with preschoolers, Wert and Neisworth (2003) studied the impact of VSM to increase spontaneous requests in play with four children ages 4-5. They recorded play sessions in the children's own homes and used video clips which portrayed requests that appeared unprompted. All four children had marked increases in spontaneous requests after viewing their videos (with 3 of the 4 showing immediate increase after their first VSM session). In addition, the target skill was generalized by the children to their preschool setting even though VSM recordings occurred in their homes.

Clearly, there is a growing body of evidence to support the use of VSM for preschool-aged children, but some studies also report mixed or no positive findings, especially for children younger than four. Clark, Beck, Sloane, Jenson, Bowen, Goldsmith, and Kehle (1993) found no improvement in compliance with teacher's requests from using VSM with six children ages 3-5 years who had diagnoses of oppositional defiant disorder (ODD). These children had extreme characteristics of ODD, and the

study also used an alternating method between self and peer video modeling. None of the children in this study demonstrated gains in compliance or reduction of aggressive behaviors with either video modeling method.

Additionally, Bugey (2012) found no change in behavior when using VSM with three children ages 3-4 with ASD to teach social initiations. The three boys ranged in ages from 3 years, 8 months to 4 years, 1 month, and although all three reportedly watched their videos, they exhibited no significant or lasting change in either physical or vocal initiations with peers on the playground. It is possible that these particular children were not developmentally ready for this level of social interaction, and Bugey explains that perhaps increasing proximity to peers (i.e. parallel play) might have been a more reachable goal for the children in this study.

More recently, Bugey and Ogle (2013) evaluated the effectiveness of VSM to increase social interactions between very young typically-developing children and children with autism during classroom and playground activities. The children's ages in this study ranged between 2 years, 6 months and 3 years, and this is the first project to evaluate the results of VSM with children who do not have a diagnosed disability. Videos were created to include examples of physical approach, parallel play, and engaged play, and while all of the children appeared to attend to their movies, no changes in social interactions were noted following the intervention. These findings raise additional questions about the effect of VSM for such young children, especially in teaching social skills. One important factor in this study might have been the history these children had together in that they had attended preschool together for more than six months. Therefore, the typically-developing children might have already experienced numerous "rejections" of social approaches by their peers with autism which the VSM intervention was not able to overcome.

These studies indicate that there is likely a developmental age restriction for effective use of VSM or possibly that the types of skills attempted in these studies were too far beyond the capabilities of the particular children involved. At any rate, more research is warranted with young preschool children under age 4 to determine which skills can be most effectively taught through VSM as well as what age or developmental limitations there may be.

#### Research Question

The purpose of this study was to determine whether or not VSM can be used effectively to teach a very young child (age 3-years 1-month) the behavioral and adaptive skill of sitting for a longer period of time at the table for meals as well as the social skill of taking turns in ball play with a sibling. A unique aspect of this study involves the setting. VSM interventions were used by the child's parents in the natural setting of their home, differing from many VSM studies which have been conducted in classrooms or clinical settings by professionals. So, this project also hopes to answer questions about the effectiveness of caregivers' use of VSM within the natural routines of a young child's day as well as whether or not VSM is an effective intervention tool for a child this young.

## CHAPTER II

### METHODS

#### Participant

This project evaluated the impact of VSM to teach a 3-year 1-month old boy (Oliver) targeted social and adaptive skills within his home routines. Oliver was enrolled in an early intervention home visiting program prior to his third birthday, and he was recruited to be part of this study by his early interventionist (author). He has a diagnosis of developmental delay as determined by the Battelle Developmental Inventory II, and he has been evaluated for ASD and ADHD. He had taken ADHD medication within the past six months, but was not taking any medication at the time of this study. Oliver has delays in receptive and expressive communication and social skills, and his parents have expressed concern regarding impulsive behavior. It was believed that this intervention tool could work well for Oliver because he is highly motivated to watch TV, movies and play games on a tablet. He can also recognize himself in video and pictures, calling himself “Ta.”

#### Setting

Baseline data were collected in the kitchen and living room of Oliver’s home. Video recording for the VSM intervention was also conducted in these rooms of the family’s home. Oliver’s parents showed him his video at home in various rooms of their house before his sister arrived home from school and prior to Oliver’s meal times.

#### Materials/Equipment

Baseline and intervention data were collected by video on a JVC HD hand-held video camera. This camera was used by the author and Oliver’s parents, and they were provided a small tripod in order

to make recording easier. The simple features of this camera allowed the family to push the record button and then go about their family routine without extra attention to the device. Video clips were downloaded to a Hewlett Packard laptop and stored for data collection and analysis. The family's own ball was used for baseline and VSM recordings as well as their kitchen table and chairs. In addition, the author used an iPad with the iMovie application to record VSM footage and to edit and create the VSM videos for ball rolling and sitting in the chair at meals. The iMovie app contains features for adding titles, voice-over insertions and music, and all editing and formatting was done on the iPad itself so that one device could be used to create and view the VSM video.

### Experimental Design

This project was a single subject study using a multiple baseline design. Targeted behaviors and skills were included in Oliver's IFSP (Individual Family Service Plan). They consist of the following:

- Rolling a ball back and forth with his sister at play
- Sitting at the table to finish his meal at supper without running away

### Procedures

First, baseline data were collected (by video) of Oliver playing ball with his sister Ella. Oliver's parents had reported that he would not roll a ball back to Ella, even with prompting, and that although he would catch the ball when it was thrown to him, he often ran off with the ball or threw it in a different direction. Quantitative data were collected over a ten-day period to document the number of turns Oliver would take during ball play. Oliver took 0 turns during baseline recording, and even though he appeared enthusiastic to catch the ball (holding his hands out and smiling), he refused to roll or

throw the ball back to his sister by saying “no”, throwing the ball in a different direction, or running off with the ball.

Next, a VSM video was created which depicted Oliver rolling a ball back and forth with Ella in the family’s home. Oliver’s parents and EI provided prompts and reinforcement to encourage him to take a turn, and separate incidents of play were combined and edited to create a video of Oliver taking 10-12 turns with his sister. During the VSM recording, Oliver was resistant at first to roll the ball back to his sister, but he rolled the ball 3-4 times to his father (with frequent prompts). In order to capture this rolling behavior, Oliver was recorded rolling the ball to his father 2-3 times and then his sister took the father’s place. Then, Oliver rolled the ball to his sister (with prompting) 2-3 times as well. Two different clips of Oliver rolling the ball were recorded and looped to make it appear that he took numerous turns on his final VSM video. All prompts were edited from the final video so that Oliver saw a depiction of himself taking turns independently in play with his sister. Oliver’s ball-rolling video was approximately one minute in length when completed.

Oliver’s parents began showing him the finalized video before his sister arrived home from school (and at other times during the day at his request). The first time Oliver watched his video, the author and his mother were present. He watched the video with interest and then at the end of the video, he said “Play ball?” When his sister Ella said, “Oliver, do you want to play ball,” he sat down and rolled the ball back and forth five times with his sister. The author coached Oliver’s mother through showing him the video (without any other talking) and then demonstrated how she should record the play event by video after Oliver had watched his movie.

During the VSM intervention phase for Skill 1 (turn taking), baseline data were taken by video to determine how long Oliver would remain seated at the family table for a meal (Skill 2). Prior to intervention, his parents described behaviors of standing, running off, and wanting to climb into his

mother's lap during the family's meals. Although Oliver's parents reported that he would sit very briefly in his seat, they wanted to increase the amount of time he would sit and remain engaged in eating. Oliver's parents took video recordings of four different meals over a period of nine days, including lunch and supper, and the author viewed these video clips, measuring the exact amount of time Oliver remained seated at each incident. It should be noted that in their home the TV is often on during meals, and so the TV was left on for baseline data collection as well as the VSM video.

In order to create the VSM video for sitting at the table, Oliver's parents offered some of his favorite foods—ice cream and French fries. Oliver was recorded sitting in his chair, eating, and responding to his mother. An introductory voice-over was used to announce, "Oliver sits at the table to eat his food," and times when Oliver refused a bite of food or pushed his drink away were cut from the final video. Toward the end of the video, he begins to squirm and moves toward getting out of his seat. His father asks, "Are you all done?" and Oliver answers "All done." The end of his video shows an empty plate and bowl with another voice-over stating "Oliver sat in his chair and finished all of his food. Good job Oliver!" The final VSM video for sitting at the table was approximately two minutes long.

#### Data Collection/Inter-rater Agreement

During the first ten days of the study, baseline data were collected during ball play sessions between Oliver and his sister, and event recording by video was used to measure the frequency of turns taken by Oliver. The author and supervising professor viewed baseline videos and collaborated to define "taking a turn." It was determined that any attempt Oliver made to toss, roll, or throw the ball toward his sister while looking at her would constitute a "turn." Next, the first model video was created and shown to Oliver in the afternoon before his sister arrived home from school (his parents chose days which worked best within their schedule). Oliver's sister, Ella, was a willing helper, and when prompted by her parents,



she would ask Oliver if he wanted to play ball. Oliver's parents or the author recorded four different ball play sessions during the intervention phase, and two additional play sessions were counted after VSM interventions stopped. The author viewed each baseline and intervention session to document numbers of turns taken during each play session and recorded these on data collection charts. The supervising professor also viewed two intervention data videos, and there was 100% agreement regarding the number turns taken by Oliver during those play sessions.

For the second goal (remaining seated for longer at meals), duration recording was used to determine baseline and measure progress. Again, video recordings of the family's meals were taken, and the author viewed each video segment. Using the stopwatch feature on an iPhone 4S, the author measured time from the moment Oliver first climbed into his seat at the kitchen table (or the beginning of the video recording if he was already seated when the recording began) until he got down out of his seat. Even if he returned to his seat later in the meal, the author only counted the initial amount of time he remained in his chair. The author showed video recordings to the supervising professor and both agreed on the measurement method and that recorded time would be stopped at the moment Oliver left his seat.

#### Treatment Fidelity

The author held two separate meetings with Oliver's parents before beginning the study to explain VSM and how the video viewing and data collection would work. They gave their consent for their children to participate in the project, and the author provided them with a checklist (Appendix B) detailing specific steps for showing Oliver his video and recording data afterward. The author also made repeated visits in their home to model showing Oliver his video and recording ball play sessions and mealtimes. When Oliver's parents showed him his video the first time, the author provided feedback

and coaching to ensure intervention fidelity. Although the author did not directly observe Oliver's parents showing his video and collecting video data for the second skill (sitting at the table), they had demonstrated clear understanding and implementation of VSM during the first behavior phase (ball rolling).

## CHAPTER III

### RESULTS

All data are presented in Figure 1. For Skill 1, taking turns during ball play, an increase of turn-taking occurred immediately following Oliver's first viewing of his VSM video. These gains remained throughout intervention and maintenance phases. During baseline, Oliver took 0 turns rolling or throwing the ball back to his sister. He would squeal and hold out his arms to catch the ball and would even respond to her question, "Do you want to play ball?" by nodding his head and sitting down. Baseline behaviors included throwing the ball in the opposite direction of his sister, yelling "no", running away while holding the ball, and coming over to his sister and falling/sitting on top of her. At one baseline session, Oliver's father tried sitting behind him to encourage him to roll the ball to his sister, but Oliver yelled "no" and ran across the room.

For Skill 2, increased sitting during meals, the results were varied and indefinite. Data show a slight but steady increase in sitting times for each baseline session, but Oliver's parents reported that these time segments are typical of his day-to-day variation and that he will sometimes sit for 2-3 minutes at a meal depending on what food is offered and whether or not he is hungry. Usually, a family member sat with Oliver at the table during baseline sessions, but having a parent present does not appear to impact the length of time he will sit. For example, during his shortest baseline session (33 seconds), his mother was sitting and eating with him. She was also sitting with him during his longest baseline session (2 minutes, 48 seconds). It is possible that having Oliver's sister at the table increases the amount of time he will remain seated, as his sister was sitting with him at each of his longest measured times (both in baseline and intervention phases).

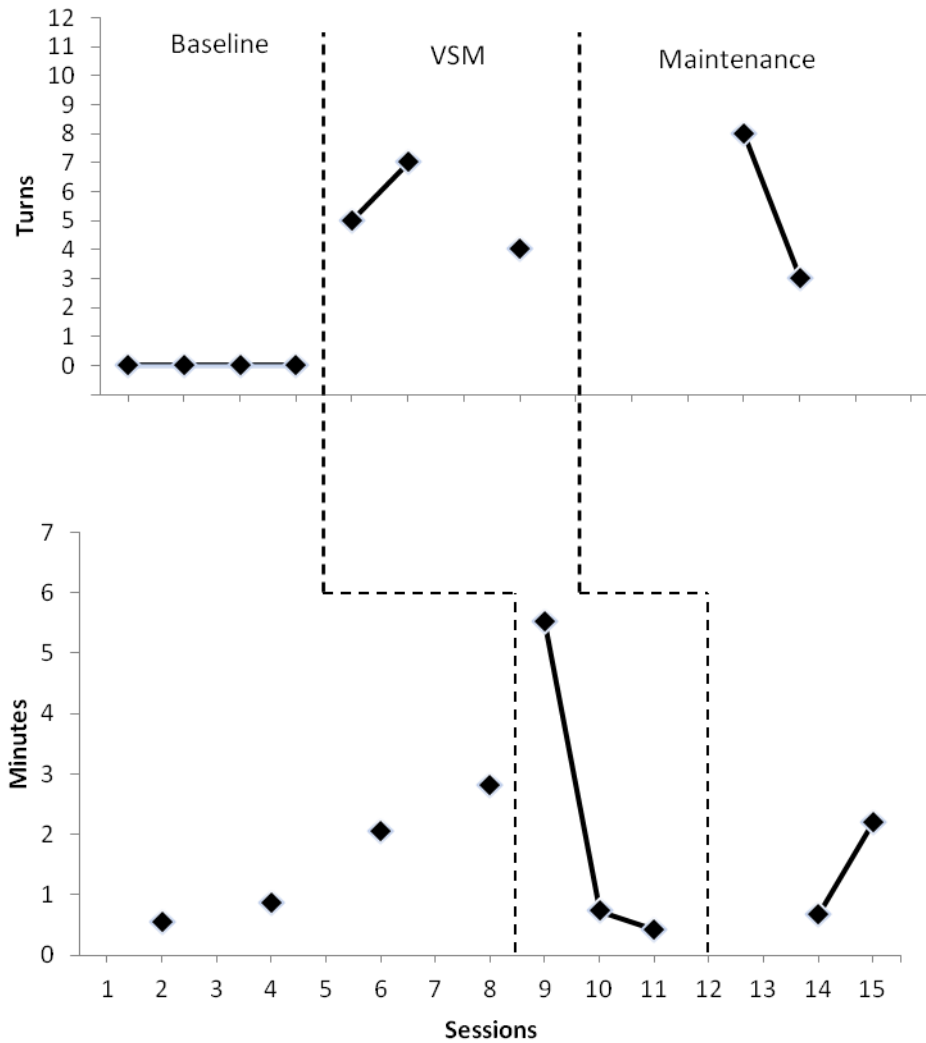


Figure 1.0 Intervention Data

After viewing his first VSM video of sitting at the table to eat, Oliver sat for 5 minutes, 31 seconds. During the second VSM session, his mother reported that the video recorder malfunctioned, and although she thought the meal was being recorded, it was not. She stated that he sat for at least five minutes during this particular meal, but this data point could not be officially included on the graph

due to the lack of definite time recording. Oliver's mother expressed that she believes he has been sitting for longer periods of time since he began viewing his VSM video, but his final duration recordings during intervention dropped to below-baseline levels. Maintenance recordings were also at or below baseline levels. It should be noted that in the longest sitting session, Oliver's sister was at the table with him, and during his shortest sessions, he was at the table alone. His VSM video portrays him eating mostly alone but with his mother nearby, and she periodically offers him another bite or a drink. The video was recorded this way because his parents especially wanted him to sit for longer during meals when his sister is at school and not at the table with him. In his final recording session during intervention (25 seconds), Oliver pushed his fries away and closed his chicken nugget box and took it with him upon leaving the table. No one was sitting at the table with him during this meal.

## Discussion

It appears that video self-modeling was an effective tool for teaching Oliver the new skill of rolling a ball back and forth with his sibling. The immediate development of this skill after viewing his video is consistent with other VSM studies and quickly indicated that Oliver was responsive to the intervention. It should be noted, however, that no additional baseline data were collected after the VSM filming session, so it is possible that VSM recording itself contributed to skill gains. The author observed Oliver's first viewing of his movie, and he was eagerly watching the screen, smiling, and pointing to his family members while naming them. Oliver's mother reported that in some viewing sessions to follow, he would watch for a few seconds and then would run off, often returning to watch more of the video before it ended. Even watching part of each video session seems to have produced effective results for this skill.

Further, Oliver maintained this skill even after VSM intervention ended, and he was able to generalize turn-taking to playing ball with a family friend. This friend was present for a home visit the author made to collect maintenance data, and he shared that he had played ball with Oliver over the past weekend, stating that they had rolled the ball back and forth “8-10 times”. Oliver’s parents expressed that they felt showing him the video was easy, especially since he liked to watch himself in the movie, and they believed it worked very well to teach him this new skill. In fact, although the family does not own an iPad, the author was able to show Oliver’s mother how to use her iPhone to take video clips of appropriate behaviors or skills within Oliver’s daily activities, and she indicated she would like to use such a video clip to help with toilet training and teaching appropriate behavior in stores in the weeks to come.

Because Oliver struggles with social and behavioral challenges, his parents shared that they feel they spend a lot of time correcting negative behaviors at home. VSM seemed to be a positive experience for their family in that it gave them opportunities to praise Oliver for doing the right thing. In later recordings for data collection, Oliver would even look toward the person recording and say “good job” after he rolled the ball back to his sister.

Although the VSM intervention seems to have impacted Oliver’s turn-taking with ball play, it was not effective to increase the duration of sitting time at the table for meals. There are many possible reasons for this. First, sitting is a skill Oliver already possessed in that he already had the ability to sit in his chair, albeit a short amount of time. So, perhaps VSM is not effective to increase the duration of a skill, especially with a child so young. In his VSM video, the only indication of time passing was the gradual reduction of food on his plate as he ate. A closing phrase was also included which praised Oliver for “sitting in his chair and finishing all his food.” However, this phrase may not have been grasped by Oliver when he watched his video due to his language and communication delays.

Next, it is also possible that due to Oliver's age and social/attention challenges, VSM was not effective to increase his engagement with meals and consistently impact his sitting for longer periods of time. Although he showed interest and enjoyment when watching his VSM video (smiled, pointed and vocalized), he would frequently run off and then come back again before the end of the movie. His parents also report that he has an extremely short attention span with any task, including play activities, looking at books, and of course, meals. Similar concerns were raised by Buggey (2012) in his study of three year olds who did not make gains through VSM, as he suggested that the target skills might have been beyond the scope of the boys' developmental abilities.

Although it was not a direct part of this study, the data indicated that each time Oliver sat for the longest sessions (both in baseline and intervention phases), his sister was at the table with him. In the recordings of those mealtimes, he would look toward her and sometimes respond to her questions or talking. He appeared more engaged and remained in his chair for longer each time she was seated at the table with him. This may suggest that having a slightly older child model appropriate sitting/eating at the table would have greater impact on Oliver's mealtime behavior than VSM intervention or prompting by parents. Further research into this question is warranted.

Also, it is likely that Oliver was simply not as interested in eating at some times as opposed to others. No restrictions were given to the family to limit food intake for certain periods of time prior to meals, so there is no real way to determine how much natural hunger and interest in food factored into the amount of time Oliver sat at any given recording session. In future studies, this would be an important variable to consider so that consistency in the child's hunger level could be attempted (to the greatest extent possible) at each mealtime intervention session. Finally, Oliver's young age may be an important factor in the limitations of this intervention method to improve mealtime sitting. As some

other studies have indicated (Buggey 2012, Clark et al. 1993), VSM has not worked with several children younger than four years of age.

#### Limitations

An inevitable limitation when conducting research within a child's home is that direct implementation of the intervention is not in the author's control. Although several precautions were taken to ensure intervention fidelity, it is possible that videos were not shown as directed. Additionally, Oliver's parents sometimes provided natural praise when Oliver demonstrated the target skill (whether being recorded or not), so it is possible that their praise and attention to this behavior also contributed to skill gains. Another threat to consistent data collection was illness that occurred in the family during the study, and planned data sessions with the author had to be canceled. This caused a greater gap between intervention and recording dates than was planned. Also, a difficult family issue arose during baseline data collection for Skill 2, and Oliver's family expressed a desire to move forward and finish the project. This request caused the author to begin VSM intervention for Skill 2 earlier than appropriate, since Oliver was sitting for longer periods of time at each subsequent baseline session. Finally, equipment malfunction during data collection of Skill 2 also caused a loss of one recording which might have demonstrated greater gains. The use of technology is an important tool in modern research, but problems with equipment could impact the study and possibly distort reliable results.

#### Conclusion/Social Validity

Although parent satisfaction with VSM was not quantitatively measured through this study, Oliver's parents reported that they felt the intervention was simple to use and enjoyable for them since Oliver was very motivated to watch himself in his movie. They were pleased with the new play skill he



learned and stated that the playtimes with his sister were positive experiences for them all. Although the data recording was problematic for them at times (especially when equipment malfunctioned), Oliver's mother was optimistic about using VSM again on their own with Oliver. Throughout the study, she learned how to take video clips on an iPad as well as on her smart phone, and she indicated she would like to use short video clips on her phone as a simplified VSM intervention for teaching new skills and encouraging positive behaviors in the future. Overall, Oliver's parents expressed they felt this intervention was helpful for their son. This may be more significant than the data collected, particularly for interventions implemented in a child's home by caregivers, because if parents feel confident and capable to carry out VSM, they may be more likely to use it again for future skills.

## REFERENCES

- Bandura, A. (1977). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bellini, S. (2004). Social skill deficits and anxiety in high functioning adolescents with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 19*, 78-86.
- Bellini, S., Akullian, J., & Hopf, A. (2007). Increasing social engagement in young children with autism spectrum disorders using video self-modeling. *School Psychology Review, 36*, 80-90.
- Buggey, T. (1995). Videotaped self-modeling: The next step in modeled instruction. *Early Education and Development, 6*, 39-51.
- Buggey, T. (2005). Video self-modeling applications with students with autism spectrum disorder in a small private school setting. *Focus on Autism and Other Developmental Disabilities, 20*, 52-63.
- Buggey, T. (2009). *Seeing is believing: Video self-modeling for people with autism and other developmental disabilities*. Bethesda, MD: Woodbine House.
- Buggey, T. (2012). Effectiveness of video self-modeling to promote social initiations by 3 year olds with autism spectrum disorders. *Focus on Autism and Other Developmental Disabilities, 27*, 102-110.
- Buggey, T., & Ogle, L. (2013). The use of self-modeling to promote social interactions among young children. *Focus on Autism and Other Developmental Disabilities, 28*, 202-211.
- Cardon, T., & Azuma, T. (2012). Visual attending preferences in children with autism spectrum disorders: a comparison between live and video presentation modes. *Research in Autism Spectrum Disorders, 6*, 1061-1067.
- Cardon, T. A., & Wilcox, M. J. (2011). Promoting imitation in young children with autism: a comparison of reciprocal imitation training and video modeling. *Journal of Autism and Developmental Disorders, 41*, 654-677.

- Charlop-Christy, 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.
- Clark, E., Beck, D., Sloane, H., Jenson, W., Bowen, J., Goldsmith, D., & Kehle, T. (1993). Self-modeling with preschoolers: is it different? *School Psychology International, 14*, 83-89.
- Dowrick, P. W., & Biggs, J. (1983). *Using video: psychological and social applications (1st ed.)*. New York: Wiley.
- Grandin, T. (2010). *Thinking in pictures: and other reports from my life with autism*. New York: Vintage Books.
- Koning, C., & Magill-Evans, J. (2001). Social and language skills in adolescent boys with Asperger syndrome. *The International Journal of Research and Practice, 5*, 23-36.
- Litras, S., Moore, D. W., & Anderson, A. (2010). Using video self-modeled social stories to teach social skills to a young child with autism. *Autism Research and Treatment*.
- Messinger, D., & Fogel, A. (January 1, 2007). The interactive development of social smiling. *Advances in Child Development and Behavior, 35*, 327-366.
- Sherer, M., Pierce, K. L., Paredes, S., Kisacky, K. L., Ingersoll, B., & Schreibman, L. (2001). Enhancing conversation skills in children with autism via video technology. Which is better, "self" or "other" as a model? *Behavior Modification, 25*, 140-158.
- 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*, 30-34.

APPENDIX A

DATA COLLECTION FORMS

Appendix A

Data Collection Form 1

Behavior 1: Oliver rolling a ball back and forth with his sister Ella during play

Date/Time	Number of times Oliver rolls the ball back to Ella following one initial prompt "Let's play ball".	Notes

Data Collection Form 2

Behavior 2: Oliver sitting in his seat at the table for family meal at supper

Date/Time	Duration of time Oliver remains in his seat at supper	Notes

APPENDIX B  
VSM FAMILY CHECKLIST

## Appendix B

### VSM Family Checklist

- Turn on the video recorder
- Tell Oliver “Let’s watch your movie”
- Show Oliver his ball play video
- After he watches the video (or later in the day), say “Let’s play ball” or have Ella ask Oliver to play ball.
- Ask Ella to roll him the ball.
- Do not give any other verbal prompts or directions to Oliver (we want a recording of what he does independently from watching his video)
- When he is no longer engaged in rolling the ball back and forth, end the play session and turn off the video recorder
- Allow Oliver to watch his video as often as he likes and as you are able during the day.



## VITA

Deidra Beeler Love was born in Knoxville, TN, to parents Terry and Sheila Beeler. She attended elementary, middle and high school in Knoxville, graduating from Central High School. Deidra attended Carson-Newman College (now Carson-Newman University) and studied English education and French. She graduated with a dual degree in English literature and secondary education in 1994 and earned her secondary teaching certification in English that same year. Deidra spent four years teaching middle and high school reading and English courses in both Knoxville, TN and Fort Worth, TX. She then completed 18 hours of early childhood graduate coursework at the University of Texas at Arlington, TX, adding an endorsement for early childhood education to her teaching license. Deidra worked as an early childhood interventionist for two years in Fort Worth before moving to Washington D.C. and taking a short break from her career when her first two children were born. She moved to Chattanooga, TN, in April, 2003, and one year later, she began working as an early childhood interventionist with Tennessee's Early Intervention System (TEIS). Deidra has continued her work in the early childhood field, working with both TEIS and Siskin Children's Institute over the past ten years, and in 2011, she began pursuing her Master's degree in Education at the University of Tennessee, Chattanooga. She currently serves as the early childhood behavior specialist at Siskin Children's Institute, where she is passionate about training parents and caregivers to teach the young children in their lives who have significant behavioral, social, and emotional challenges.