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Evaluating the Efficacy of Video Self-Modeling Social Skills in Children With Autism Spectrum Disorder

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Walden University
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Abstract

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MS, Grand Canyon University, 2013

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Dissertation Submitted in Partial Fulfillment

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Abstract

The inability to display social reciprocity is a hallmark criterion of autism spectrum disorder (ASD). This lack of proper social skills (i.e., eye contact, cooperative play, and reciprocal interaction) indicates the importance of purposeful interaction, about which a research gap exists. The theoretical framework for this study was social learning theory, by which Bandura (1977) posited that learning occurs by observing the behavior of others. The current study involved examining the effectiveness of an intervention conducted with children who have ASD. The purpose of the intervention was to increase children's playground social skills by having them watch themselves at play via video (i.e., video self-modeling [VSM]). Videos of three boys ages 5 to 10 years, who were nonverbal, diagnosed with ASD, and lacked social skills were observed. The number of times playground social skills (i.e., eye contact, cooperative play, and reciprocal action) were witnessed were recorded before and after the VSM intervention. Four research questions were examined to determine whether children with ASD exhibited a marked increase in playground social skills (i.e., eye contact, cooperative play, and reciprocal action) following VSM treatment. Specifically, the number of times the child interacted with another was tallied. Results revealed substantial improvement in the social skills of the children with ASD. The use of VSM in this population has implications for positive social change, as children with ASD could be better able to gain the social skills and tools necessary to interact with others. The results of this study could be used to support interventions for providers, further enhance the social skills of children with autism, and provide information to caregivers on how to best support their children and techniques they can use.

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Dedication

I dedicate this research to my brother, who helped me grow. Although he recently passed away, his motivation in both life and school inspired me to push through.

Acknowledgments

I want to thank my chair, Dr. Tracy Masiello, and my committee member, Dr. Glidewell, for all your help in getting me this far.

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Chapter 1: Introduction to the Study

Children with autism spectrum disorder (ASD) frequently encounter challenges achieving the social skills (e.g., eye contact, cooperative play, and reciprocal action) they will need throughout their lifetime (Kabashi & Kaczmarek, 2017). As Gelbar et al. (2012) found, strategies such as video self-modeling (VSM), interaction techniques, and other tools can be used to help children grow, learn, and succeed. VSM is a cognitive-behavioral treatment shown to be successful with children who have ASD and lack a variety of skills. This treatment results in the advancement of skills and improved daily living. The more children see what they can do successfully, the more they feel they can do—and feel better about themselves doing it (Boudreau & Harvey, 2013)—which, in turn, may create higher motivation.

In this chapter, I discuss the background of the study as social skills shortcomings in children diagnosed with ASD and the potential of VSM treatment. Next, I explain the problem statement and purpose for improving the social skills in this population. Following a presentation of the three research questions and hypotheses, I address the theoretical foundation of social learning theory as a framework for this quantitative study. After the definitions of terms, I close with a discussion of assumptions, scope and delimitations, and limitations. The chapter concludes with the significance of the study as a potential means to help children with ASD.

Background

VSM is a cognitive-behavioral treatment model that entails creating a video of an individual completing the targeted task and editing the file to display participants

accurately performing the targeted behavior (Victor et al., 2011). Researchers have demonstrated that treatment through VSM is efficient in improving social skills in children with ASD (Boudreau & Harvey, 2013). VSM can be used as a teaching instrument to assist a participant in successfully performing the end task (Schaeffer et al., 2016). As participants view the video, they gain awareness of their self-efficacy during the targeted task, which boosts the probability of completing the focused task independently (Gelbar et al., 2012). With such promising future applications, VSM can be used to support individual independence.

Video Self-Modeling Strengthening Daily Skills

Researchers have explored necessities for children with ASD and the differences they have. Ostmeyer and Scarpa (2012) focused on participatory action research in which all stakeholders participating in the therapy program have input in facilitating an intervention. The purpose of their study was to implement a program to help children with ASD develop social skills in school. Researchers have also discussed differences in various skills, such as potty training and engaging with others, along with longitudinal changes.

Scholars have examined other areas of social skills as well. Gelbar et al. (2012) scrutinized data comparisons and outcomes to identify the benefits of various skills, including social skills. They showed that VSM was beneficial in improving social skills. Thompson (2013) looked at past studies of children with ASD to examine how therapies have changed and what challenges researchers now face. With the rise in ASD diagnoses, more children need help developing hard and soft skills, such as social skills. Using past

data, Thompson provided an understanding of how therapies have changed over the years, finding that an early ASD diagnosis and advanced therapy can lead to more progression.

Video Self-Modeling After Video Modeling With Skills

Video modeling (VM) is similar to VSM but without the self-modeling. Although still helpful in understanding the benefits of modeling, VM lacks a critical component compared to VSM: the children observing themselves. Thompson (2013) looked at the differences between VM and VSM and the effectiveness for children and adolescents with ASD. The findings showed that both methods were useful in assisting children with developing a diverse set of skills, including social, learning, behavioral, and community skills. Lee et al. (2014) applied Bandura's (1969) social learning theory and found that VSM and VM are successful. However, of the two methods, VSM is a more useful tool for improving skills and thus was the focus of this study.

Video Self-Modeling and Improvements With Skills

Boudreau and Harvey (2013) focused on the effects of VSM on social interactions in three young children with ASD who demonstrated adequate vocal skills. Using a school setting rather than the playground setting of previous studies, the researchers found that all participants exhibited increased social interactions. Ohtake et al. (2013) took a different approach, looking at VSM and its use in reducing task avoidance behaviors in school among students with ASD. The researchers found that when the children watched the VM of tasks successfully fulfilled, they were motivated to complete

the typically avoided task. Thus, both studies s a relationship between VSM and skills improvement.

Despite significant advancements in VSM research, there remain many untested areas regarding the effects of VSM on social interactions (Thompson, 2013). To date, no researchers have examined VSM implementation in a rehabilitation therapy program designed to improve social interactions. Boudreau and Harvey (2013) found that by engaging in social interactions, children build relationships and make friends. With ASD diagnoses more prevalent in recent years, an increasing number of children with ASD populate the school system and must interact with peers, teachers, and others outside the home (Gelbar et al., 2012). My goal for the present study was to examine the effects of using VSM to model positive behavior for children with ASD.

Children with ASD need effective interventions to develop social skills (Buggey & Ogle, 2013). With this study, I contributed to the literature on social skill interventions for children with ASD by examining their response to VSM intervention, a method that might be used to help them live functional lives. In providing these results, I contribute to the understanding of the extent to which VSM can assist in improving the different skills (including eye contact, cooperative play, and reciprocal action) necessary for effective functioning in school, home, and other social situations (Eberle, 2014). This study also contributes to existing knowledge because I expanded the understanding of areas beyond social skills, such as attention span.

Problem Statement

ASD is a pervasive developmental disorder that affects one in 68 individuals each year (Thompson, 2013), creating a greater need for interventions to improve the functioning of those diagnosed. The rise in ASD diagnoses since 2013 has increased awareness of the disorder and highlighted a lack of effective interventions available to assist with learning essential skills. Current treatments to help children with ASD develop adaptive skills are insufficient, indicating the need for more beneficial assistance. Although VSM treatment might be an effective intervention for individuals with ASD, to date, VSM researchers have failed to incorporate a variety of skills, especially for children with ASD. Ohtake et al. (2013) found that children who have ASD need a program in place to develop social skills, as the ones currently available are deficient. Gelbar et al. (2012) found that replacing a negative behavior with VSM intervention results in participants improving their efficacy for the targeted task. There are many benefits of VSM identified thus far, but in this study, I highlighted more skills that had not been addressed.

Children with ASD lack a variety of skills, especially social skills, and more interventions are needed for them to learn these skills. Observing nonverbal children is one way to advance knowledge in this area. Although previous researchers have examined the use of VSM in other areas, such as toilet training, what is still needed is research in which the use of VSM in the area of social interactions is examined. Eye contact, cooperative play, and reciprocal action are underresearched and critical social skills to target in VSM research. More children with ASD attend mainstream schools and

need the skills necessary to succeed in life. Because VSM techniques are newer than other well-established methods, few participants have taken part in studies despite data showing the potential efficacy of this intervention (Boudreau & Harvey, 2013). Further research is needed to explore VSM's benefits and use.

With this study, I contributed to the existing literature on VSM as an intervention for those with ASD. I examined VSM within the context of a rehabilitation program for children ages 5 to 10 with ASD, focusing on the social skills of eye contact, cooperative play, and reciprocal action.

Purpose of the Study

The purpose of this quantitative multiple baseline study was to determine if there is a relationship between VSM treatment and improved social interaction through eye contact, cooperative play, and reciprocal interaction in children with ASD. I analyzed social skills data collected from the leaders of one HTP. VSM was the independent variable, and eye contact, cooperative play, and reciprocal action were the dependent variables. Eye contact is defined as when the child looks at another child, cooperative play is when the child plays with another child, and reciprocal action is when two or more kids play together doing the same thing. I selected the dependent variables based on previous social skills research that indicates a lack of academic inquiry related to those variables.

Research Questions and Hypotheses

The four research questions (RQs), null hypotheses (H_0), and alternative hypotheses (H_1) were as follows:

RQ1: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of eye contact after video self-modeling treatment?

$H_0$1: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% difference in playground eye contact after video self-modeling treatment.

$H_1$1: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground eye contact after video self-modeling treatment.

RQ2: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of cooperative play after video self-modeling treatment?

$H_0$2: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% difference in playground cooperative play after video self-modeling treatment.

$H_1$2: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground cooperative play after video self-modeling treatment.

RQ3: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of reciprocal action after video self-modeling treatment?

H_1^3: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground reciprocal action after video self-modeling treatment.

H_0^3: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% difference in playground reciprocal action after video self-modeling treatment.

RQ4: Do children with autism spectrum disorder exhibit a marked increase in playground social skills (eye contact, cooperative play, and reciprocal action) after video self-modeling treatment?

H_1^4: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% increase in playground social skills (eye contact, cooperative play, and reciprocal action) after video self-modeling treatment.

H_0^4: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% increase in playground social skills (eye contact, cooperative play, and reciprocal action) after video self-modeling treatment.

Theoretical Framework

The theoretical framework for this study was social learning theory, which Bandura (1977) introduced to suggest that learning is established by observing the behavior of others. A change in one's action follows the individual's observation of the VSM; thus, learning is based on observation. Bandura (1969) considered this observational learning, also known as modeling. Although modeling has proven useful for teaching a variety of targeted behaviors, it is limited when the target individual is not the one shown conducting the modeling. When VSM is unavailable, self-modeling is appropriate for observational learning.

Self-modeling involves individuals seeing themselves completing a particular task successfully, showing them they can achieve the desired outcome. Children can observe themselves performing a function, and observers can measure social skills improvements. Results of successful self-modeling include strengthening skills, improving in a variety of targeted areas, increasing self-esteem, and advancing hard and soft skills. Chapter 2 includes a more detailed explanation of the social learning behavioral model explored by past researchers. As learning by observation is an application of social learning theory (Bandura, 1977), it was an appropriate framework for this study's approach and research question.

Nature of the Study

Scientists use quantitative research methods to uncover measurable data and perform statistical analysis (Goertzen, 2017). Quantitative data is used to answer quantifiable *what* or *how* questions regarding amounts, percentages, and proportions. Behaviors and trends could become clear following quantitative analysis. This method was appropriate for the present study, in which I used the quantitative research approach to make comparisons through observation, a topic used for primary analysis in past research and secondary analyses. The independent variable was VSM, and the dependent variable was social skills, which included eye contact, cooperative play, and reciprocal interaction.

The HTP leaders compiled primary data through playground videotaped observation, which I subsequently analyzed. My role in this study was limited to observation of the archival videotapes collected during the program; there was no

treatment for the children conducted on my behalf or by me. Data gathering occurred at the playground before administration of the VSM and again after showing VSM in the therapy program to assess for differences in interaction exhibited by participants. Scorers used a frequency table to record in increments of 15 seconds when participants engaged with another child, gave eye contact, played, and interacted, all of which are within the scope of social skills. A multiple baseline design was used to assess how long the child took to complete each phase of the study. Separate observation and analysis of three participants occurred, followed by comparing the three participants. To maintain participant privacy, all data remained securely in a folder and locked up at the HTP center after each session.

Definitions

Autism spectrum disorder: ASD is a condition relating to the brain and its development that impacts how a person sees things and interacts with others, causing problems with social skills and communication (Boudreau & Harvey, 2013).

Cooperative play: When a child plays with another child, they engage in cooperative play. Cooperative play was one of the dependent variables in the present study.

Eye contact: Children exhibit eye contact when they reach out to another child using their eyes (Jones et al., 2017). Eye contact was one of the dependent variables in the present study.

Habilitation therapy programs: HTPs are health care services where professionals assist with learning skills and daily living (Ohtake et al., 2013).

Interaction: Two or more individuals interact when there is ongoing action between them (Janlert & Stolterman, 2017).

Modeling: Individuals who learn via modeling learn by imitation (Lee et al., 2014).

Nonverbal: An individual who is nonverbal does not have or use words or speech (Lee et al., 2017).

Play: Playing involves participating in an activity for enjoyment and recreation (Eberle, 2014).

Reciprocal action: Reciprocal action, the third dependent variable in the present study, occurs when two or more kids play together doing the same thing.

Skills improvement: Demonstrated advancement in an individual's capabilities with regard to a given task or action indicates that their skills have improved (Boudreau & Harvey, 2013).

Social improvement: Individuals must improve their overall well-being in society to reach their full potential (Buggey & Ogle, 2013).

Social interactions: Individuals engage in social interactions via exchanges with one or more others (Gelbar et al., 2012).

Social skills: Competence-facilitating interactions and communication with other people contribute to a person's social skills. These can include social rules and relationships and communication in verbal and nonverbal ways (Buggey et al., 2016). The overarching dependent variable in the present study was social skills.

Video modeling: VM is a visual learning method in which a person watches a video of someone else modeling the targeted behavior or skill (McLay et al., 2015).

Video self-modeling: VSM, this study's independent variable, is a type of observational learning wherein people observe themselves performing a targeted skill on video and presumably imitate the skill (Gelbar et al., 2012).

Assumptions

Assumptions about a study are things believed but not proven (Marshall & Rossman, 2016). In this study, I assumed that children understand and grasp what they see in VSM (see Kabashi & Kaczmarek, 2017) and how to project what they see in VSM (see Gelbar et al., 2012). I also assumed that VSM would be effective for the population of children with ASD. Because only a few children participated in the HTP experiment, it was impossible to apply the findings to all children with ASD. However, I expected that VSM could help more than hinder a person with ASD.

Scope and Delimitations

With the rise in ASD diagnoses comes an increased awareness of this disorder and the need to find ways to help these children (Thompson, 2013). Current modeling initiatives are inadequate, signaling the need for more efficient treatment methods (Ohtake et al., 2013). VSM is one way to help individuals with ASD to learn and acquire skills. There is no detailed research on the combination of ASD, VSM, and social skill improvements in children ages 5 to 10 years. In this study, internal validity was the methodological examination of VSM and social skills. Thus, the results contribute to accepting or rejecting the hypotheses drawn from the data. With only a brief period of

measurement, there was no effect of time or history in observation (see Lee et al., 2017), allowing for visible results right away (see Lemmon & Green, 2015).

The participants I selected met the study criteria of nonverbal children ages 5 to 10 years diagnosed with ASD who lacked playground social skills. The theoretical framework was social learning theory (Bandura, 1977), with learning established by observing the behavior of others. In this approach, a change in one's action is based on an observation from viewing modeling (e.g., VSM). Because VSM works well for children with ASD in the HTP does not mean the results are generalizable to other populations. However, if VSM helps children with ASD, individuals in the general population will likely have even greater success. Other researchers (e.g., Boudreau & Harvey, 2013; Gelbar et al., 2012) looked at different communities where VSM worked well; thus, their results are more easily generalized.

Limitations

There were a few limitations to the study. First, the participants had common characteristics, such as age (between 5 to 10 years) and being nonverbal male youth who lacked social skills. Participants also attended the same HTP and received an ASD diagnosis. Another limitation was the close focus on improving social skills (eye contact, cooperative play, and reciprocal action) with other children. It is unknown if participants would have attained these skills on their own or if these results will lend themselves to generalization in other areas. If VSM showed that children with ASD used VSM successfully to acquire social skills (eye contact, cooperative play, and reciprocal action), exploring other skills or social skills in other areas could be valuable.

Because I observed only three children's videos, it was impossible to generalize findings to a larger group, especially when the sample was similar in age and gender (see Ohtake et al., 2013). The best way to address this limitation was to look at other studies, compare how well VSM worked for those participants, and see if this study's results were consistent. This action will make the present findings more valuable and beneficial by proving VSM works in other areas (see Lee et al., 2017), increasing the generalizability of results.

Children in the HTP were exposed to children before and after the VSM. There is always a risk of having the same other children president the same day as the participant but before and after VSM presentation. Although unlikely, this was a potential concern because a participant's exposure to other children beforehand could have altered the data. The HTP observers addressed this concern by visiting a variety of parks. Because the study occurred similarly to past studies, the research methodology and structure were reliable; however, there is always a limitation. The only possible bias was that observers could have erroneously interpreted interactions based on personal wishes or expectations. Accordingly, the HTP program leaders sent me all the recordings for analysis (see Boudreau & Harvey, 2013). In addition, the children having to interact for at least 15 seconds for the contact to be considered an interaction ensured that no tallies were awarded in error.

Significance

Children diagnosed with ASD can have many deficits, including social skills. Because of the increasing number of children with an ASD diagnosis attending

mainstream schools, there is a need to find better ways to help them improve in these and other areas. One promising treatment is VSM. With this study, I made a unique addition to the scientific body of knowledge regarding ASD and VSM, adding more information in a vastly unexplored area: the use of VSM in individuals diagnosed with ASD. The study's results could lead to positive social change as individuals can help children and adults with ASD (see Boudreau & Harvey, 2013). The treatment I explored was relatively new yet with significant and potentially far-reaching positive implications for children with ASD (see Kurnaz & Yanardag, 2018). No researchers had specifically studied the use of VSM on children with ASD to improve playground social skills (eye contact, cooperative play, and reciprocal action); therefore, with this study, I provided knowledge to further future research and potentially help other children with ASD who lack adequate social skills. With more knowledge to support the benefits of VSM, the treatment could be applicable to other areas where a child with ASD is lacking. Despite the promise shown by VSM, hesitation often accompanies something so new (Eberle, 2014). More research to support positive outcomes could involve providers using VSM in different practices.

With this study, I could inspire positive social change as well. As children improve their social skills (specifically, eye contact, cooperative play, and reciprocal action), they gain strengths in other areas (see Ostmeyer & Scarpa, 2012). The child also develops as an individual by learning skills that are useful as a person (Jones et al., 2017). When a child receives a positive response from a peer upon interaction, the child's self-worth increases (Thompson, 2013). Thus, children will want to communicate because

they receive positive attention in return (Schaeffer et al., 2016), making them feel good about themselves. In seeing how VSM helps a child with ASD in one area, practitioners might use it in many other areas as well, helping children with ASD to advance because they learned the proper skills. Members of the community might also experience positive social change as children with ASD can engage with others more appropriately. Organizational and institutional leaders might also benefit from using VSM to improve individual skills. Ultimately, these advances will have widespread societal benefits for individuals who lack skills in different areas.

With the rise in ASD diagnoses, it is crucial to have proper interventions in place to assist these individuals (Ohtake et al., 2013). This study's findings could help expand the use of VSM for children with ASD to other areas, such as schools and therapy settings (see Kurnaz & Yanardag, 2018). Educators and other professionals might use VSM as a teaching tool and a more efficient approach to help children with ASD and other areas. Because no researcher had conducted a comprehensive examination of children with ASD, VSM, and social skills improvements, I have added knowledge in that area and in the use of VSM as a whole. VSM should be a means of improving and expanding children's skills for becoming socially independent. Lemmon and Green (2015) suggested using VSM to enhance a child's ability to perform a variety of tasks.

Summary

Children with ASD display social skills deficits, as evidenced at the playground when they do not interact with other children. With ASD incidence on the rise, more efficient interventions are needed to help children with ASD. Using VSM is one way to

help children with ASD improve their social skills and achieve other goals. In this study, I addressed the gap in research, adding to the growing body of knowledge about ASD and VSM and VSM's use in place of other interventions. Through VSM, therapists and educators might be better able to help children, adolescents, and adults with ASD.

I conducted this study to measure the effects and benefits of VSM on a sample of three children with ASD by observing data from the HTP program leaders. The theoretical framework for this study was social learning theory (Bandura, 1977), described as learning through observing the behavior of others. Social learning theory was a good fit for this study because of the nature of VSM as a learning tool. A quantitative research approach was appropriate for studying the relationship between VSM and social skills acquisition. Current means of building social skills among children with ASD are insufficient, indicating a need for more effective ways to boost socialization and other abilities. VSM is one such tool.

Despite the small sample size of the study, I expanded the limited research. More research will lead to more evidence of the effectiveness of VSM as a learning tool for children with ASD. Chapter 2 includes a discussion of social learning theory, the theoretical framework for this study. A comprehensive survey of past research and findings related to the present study comprises most of the chapter, with discussions of ASD, VSM, and social interaction.

Chapter 2: Literature Review

One in 59 U.S. adults and children has received a diagnosis of ASD, a neurological disorder that includes social and communication deficits (American Psychiatric Association, 2013). There has been increased research interest regarding children with ASD, as parents, educators, and researchers look to facilitate new ways to help these children gain necessary life and coping skills. Children can view themselves successfully performing a targeted skill via VSM, an established learning tool involving edited video clips (Cardon, 2016) to facilitate social skills. However, no researcher had comprehensively tested the effectiveness of VSM and its link to improving social skills in children with ASD, specifically eye contact, cooperative play, and reciprocal action. Because VSM is a relatively new intervention, further research is needed to establish its effectiveness. The purpose of this quantitative multiple baseline study was to determine if there is a relationship between VSM treatment and improved social interaction through eye contact, cooperative play, and reciprocal interaction in children with ASD.

Schaeffer et al. (2016) found that children build relationships and make friends through social interactions. With ASD diagnoses more prevalent than ever, increasing numbers of children with ASD are populating the school system and interacting with peers, teachers, and others (Kurnaz & Yanardag, 2018). Research is needed to identify appropriate interventions for children with ASD to develop better social skills for day-to-day coping. Of specific interest is the use of VSM, showing children a manipulated video of themselves performing a behavior and asking them to repeat what they saw. The more research conducted on using VSM with children with ASD, the better scholars can

determine its effectiveness across a range of skills and activities. Such advanced understanding has implications for professionals to devise programs to help children with ASD improve their social skills. VSM has already been effective in the general population in limited areas (Boudreau & Harvey, 2013). Therefore, it is promising that by using VSM, providers could improve social interactions in children who have ASD (Ohtake et al., 2013).

This chapter includes a summary of past research on ASD, VSM, and children's social skills. I describe search techniques used in the literature review and the theoretical foundation of Bandura's (1971, 1977) social learning theory. I provide a comprehensive review of extant literature regarding ASD, VSM, social skills, and quantitative analysis, presenting research summaries aligned with the key concepts related to the present study.

Literature Search Strategy

Searches of the PsycINFO database returned published literature in peer-reviewed journals in the field of psychology, which were pertinent to ASD as a psychological disorder. Other databases I used included Academic Search Complete, SAGE Premier, Education Research Complete, and CINAHL Plus. The initial terms I searched were *video self-modeling, video modeling, autism, children, society, influences, improvements, societal improvements, social skills, education, modeling, communicating, skill improvement, rewards,* and *learning*. Next, I queried search terms used in combination with each other, including *video self-modeling* and *autism*; *video self-modeling* and *autism* and *societal improvement*; *children* and *video self-modeling* and *autism*; *learning*

and *autism* and *video self-modeling*; and *video modeling* and *societal influences* and *education*.

In a search for the grounding theory of social learning theory (Bandura, 1971, 1977), I found a number of results, many of them seminal. Because I performed a quantitative study, I conducted research on the method as well. VSM is a relatively new approach in the treatment of ASD; as such, there has been little research on the specific topics I explored in this study, specifically the effect of VSM on the social skills of eye contact, cooperative play, and reciprocal action. I identified this gap based on literature returned from searches of the following combinations of keywords: *video self-modeling* and *autism* and *social skills*, *video self-modeling* and *autism* and *eye contact*, *video self-modeling* and *autism* and *cooperative play*, and *video self-modeling* and *autism* and *reciprocal action.* However, the minimal literature I found was mostly peer-reviewed.

Theoretical Foundation

The theoretical framework for this study was social learning theory, as Bandura (1971, 1977) viewed learning as the result of observing the behavior of others. Bandura based this theory on the behaviorist ideas of operant conditioning (Skinner, 1938, as cited in Skinner, 1976). Advancing these views, Bandura identified a mediating process after the stimuli and before the response. In addition, the theorist proposed using observational learning for individuals to learn from their environment. This theory was relevant to the present study, as I measured the social skills of children with ASD by eye contact, cooperative play, and reciprocal action after the children watched themselves performing a task with VSM.

Bandura introduced the idea of social learning theory in 1971 in response to current theories of human behavior. Bandura (1971) adopted a social learning view to describe human beliefs and behaviors as "a continuous reciprocal interaction between behavior and its controlling conditions" (p. 2). The following year, Rotter et al. (1972) provided a more comprehensive explanation of learning based on experimental and theoretical studies. Rotter et al. identified the applicability of social learning theory to studies of personality, social psychology, mental disorders, and therapy. Bandura (1971, 1977) proposed social learning theory to facilitate an in-depth look into the needs, drives, and impulses of which one might not be aware, as changes are often subconscious.

With social learning theory, Bandura (1971, 1977) proposed that response reinforcement is automatic and unconscious, occurring immediately following the response and contributing to learning. Per social learning theory, people must offer reinforcement to provide essential information and incentive and elicit responsiveness. In the observational learning approach, a change in one's practice comes from observing the individuals watching the modeled behavior. According to Bandura (1971, 1977), observational learning is learning based on observing others. Modeling and reinforcement are valid techniques for teaching a variety of targeted behaviors; however, there are more benefits when individuals view themselves, not a third party, as a model (Thompson, 2013). Self-modeling is useful with the targeted individuals seeing themselves complete the task successfully and finding self-fulfillment for achieving the desired outcome (Bandura, 1971, 1977). According to this premise, individuals can observe the child's behavior for any results of VSM. Researchers have shown the effectiveness of this

technique through the combination of VSM and observation. The child emulates the modeling, which, in turn, facilitates learning the behavior.

Researchers have looked at areas of social learning theory application with regard to ASD. In a randomized comparative trial, Soorya et al. (2015) applied a social cognitive learning program to measure three types of interventions for children with ASD: nonverbal communication, emotional recognition, and theory of mind training. The participants were children 8 to 10 years of age with ASD and IQs above 70. Soorya et al. found significant improvements in social behaviors, including nonverbal communication and social relations. Using a framework of social learning theory, Krumeich (2013) assessed a combination of skills in children with ASD; however, the researcher did not address social skills. The participants for this study were classroom teachers, not children, and Krumeich collected data through structured interviews, observations, and document reviews. Johnson (2017) used a social learning framework to conduct a literature review of recreational therapy intervention in children with neurodevelopmental disorders. Despite finding a fair amount of experimental research specific to the chosen theory and intervention, Johnson identified the need for more current studies specific to social learning theory.

Other researchers have used the framework of Bandura's social learning theory (1971, 1977) and VSM with greater relevance to the present study. Gelbar et al. (2012) integrated Bandura's theory into their research on VSM. They concluded that social learning in combination with VSM would be significantly effective in achieving the targeted behavior. Boudreau and Harvey (2013) also used Bandura's approach with VSM

on social initiations. The participants in their study—three children aged 4 to 7 years, similar to the sample in the present study—watched themselves performing spontaneous social initiations, something Boudreau and Harvey found beneficial for social initiations. The time interval Boudreau and Harvey used in the study was also consistent with the present study, as children viewed VSM for 8 to 10 seconds at a time, with subsequent observation during playtime. In another assessment of social learning theory in combination with VSM and children with ASD, Schaeffer et al. (2016) concluded that VSM had a positive effect on the social and behavioral development of all participants with ASD.

The social learning theory was applicable to this study in many ways, from the anticipated social skills improvements to the question of significance in social interaction using VSM to improve social skills (see Bandura, 1971, 1977). This study included both internal and external rewards; in comparison, Bandura (1971, 1977) investigated rewards and the unconscious—specifically, accomplishing something whose existence was previously unknown. Similarly, as understood in this study, children often fail to realize they can achieve a specific social skill until they believe they have already accomplished it. In line with the social aspect of this study, children receive rewards in the form of positive interaction from the child with whom they interacted. With such positive reinforcement, the child feels fulfilled and rewarded. The significance of social learning theory in this study and how it applies to children, specifically those with ASD, was an essential component of assisting children in learning. According to social learning theory, children learn what to do through VSM and retain what they learned by reenacting what

they saw in the video and receiving a reward. In the current study, the reward directly followed the child's social interaction with a peer.

Composing research questions built on existing studies, I expanded the VSM knowledge base and impact on improving the social skills of children with ASD. I designed this study to advance social learning theory by incorporating the concepts Bandura (1971, 1977) proposed and demonstrating how they applied to the studied population. Among these concepts were children's lack of awareness that they can do certain things, rewards, learning through observation, and direct learning. Reinforcement is automatic after the social interaction. Providers add VSM to expand the idea of learning both observationally and directly.

Literature Review Related to Key Variables

I conducted an exhaustive literature review on key variables and concepts to obtain a comprehensive view of prior research related to ASD and VSM. Topics of interest included background and detailed information on ASD, reviews of VSM and VM, and the success of using VSM to strengthen daily skills, followed by improvements and achievements thus far.

Autism Spectrum Disorder

ASD is a neurological and developmental disorder that begins in early childhood (American Psychiatric Association, 2013). ASD can include deficits in communication and behavior and impairments to language, senses, and other areas, such as intellect (American Psychiatric Association, 2013; Kurnaz & Yanardag, 2018). Children diagnosed with ASD increased from four to five out of 10,000 in the 1930s to one in 59

children in 2014, or around 1% to 2% of the population (Centers for Disease Control and Prevention [CDC], 2019a). In addition, ASD prevalence among male individuals is nearly four times that of female individuals.

Primary areas of behavior affected by ASD include individual interactions, learning, and communication (MedlinePlus, 2019). Comorbid diagnoses are expected. Nearly one third of children with ASD also have attention deficit hyperactivity disorder, and 11% to 40% of youth with ASD receive anxiety disorder diagnoses (Autism Speaks, 2019). In the United States, between 2006 and 2008, one in six children with ASD also had a developmental disability ranging from mild to severe (CDC, 2019b).

Although the cause of ASD is unknown, researchers have indicated a combination of genetic and environmental factors (MedlinePlus, 2019). There is a greater likelihood for siblings of an individual with ASD to be diagnosed, and the rate is exponentially greater between identical twins (CDC, 2019b; MedlinePlus, 2019), even as high as 90% (Sandin et al., 2017). Having a parent with ASD also increases a child's risk, as could the mother's gestational difficulties, use of certain medications while pregnant, and older age (Autism Society, 2915). Scientists have identified shape and structure differences between children diagnosed with ASD and those not, as evidenced by brain scans.

Social Skills Interventions

Children with ASD lack critical skills related to social interaction and interpersonal communication, restricted routines, and the ability to empathize with others (American Psychiatric Association, 2013), indicating the need for effective social skills training. Researchers have explored the impact of social skills interventions among

children with ASD (e.g., Ohtake et al., 2013). Based on clinical findings, there is an apparent need for programs for children with ASD to help them develop social skills, especially in school (Ohtake et al., 2013). A better understanding of ASD interventions is essential, as researchers can illuminate treatments of the disorder and help children with ASD function better.

Group-based training is one means of developing social skills in children with ASD. Deckers et al. (2016) experimented with group-administered training for children ages 8 to 12 years with high-functioning ASD. Based on feedback from parents and teachers, the researchers found improved social skills among the children, with positive results 3 months posttraining. Deckers et al. concluded that social skills training would be an effective intervention in the clinical setting. Gates et al. (2017) also studied group-based training specific to social competence among youth diagnosed with ASD. The researchers conducted a meta-analysis of randomized control trials to measure the effects of such group intervention. The youth reported moderate efficacy of social skills intervention; however, they did not always put the skills into action. Gates et al. concluded that although skills intervention benefits emerged in the clinical setting, the results were not necessarily transferable to the school environment.

Previous researchers of social skills among children with ASD have shown both strengths and weaknesses applicable to the present study. To assess the level of competency with these skills among students with high-functioning ASD, Ostmeyer and Scarpa (2012) utilized participatory action research, in which the stakeholders have input in developing interventions for their treatment. Ostmeyer and Scarpa assessed a school-

based program to develop social skills in children with high-functioning ASD, finding support for participatory action research as a means of intervention and implementation. In Ostmeyer and Scarpa's research, one strength was the receipt of input from participants, with a weakness in the potential for biased feedback from those who took part in the study. The researchers suggested the need for a larger participant base to compile a more accurate data set.

Video Modeling

VM is an effective treatment for teaching a variety of social behaviors, something Lee et al. (2014) chose to investigate with regard to developmental behaviors. Using a multiple baseline design, Lee et al. utilized VSM and functional play skills to help with a deficit known by many with ASD. The study focused on teaching a 4-year-old boy with ASD toileting skills using VM. Following VM, the young boy had learned the functional skills of undressing, sitting on the seat, and flushing the toilet; however, he did not always use the toilet once seated. Nonetheless, Lee et al. found the VM technique to be a practical approach to teaching such a difficult task. McLay et al. (2015) presented VM to two boys with ASD to help with toilet training. The researchers used multiple baseline designs to determine effectiveness, ultimately finding VM a successful tool for teaching the multiple behaviors involved in toileting and in-toilet urination. Importantly, the two boys had retained their skills 4 months post-VM. A drawback of this study was that researchers failed to consider other variables associated with toilet training, such as a combination of approaches with VSM.

Popple et al. (2016) used VM to aid in oral hygiene skills, something people with ASD often lack. The researchers recruited 18 children between the ages of 5 and 14 years who had been diagnosed with ASD and lacked oral hygiene skills. Popple et al. (2016) utilized an intervention as an approach to the research, sending e-mails twice daily to the parents or caregivers of participants with links to the videos. A caregiver administered a video intervention to the experimental group, whereas a second group viewed only a control video. The findings from ratings of intervention effectiveness showed VM to be a useful tool for promoting oral hygiene skills. Although VM proved to be beneficial, this was merely a pilot study. The strengths of the study were the preliminary results with regard to VM as a means of teaching oral hygiene skills, as well as the opportunity for Internet-based and parent-administered interventions. Weaknesses were likely not including enough participants, which affected the data results, and sending e-mail reminders twice daily, which may or may not have served as the full influence of the slight improvement in oral hygiene. Based on this study status and the inherent limitations in qualitative sample size and recruiting methods, Popple et al. suggested the need for further study to confirm their results.

History and Success With Video Self-Modeling

Building upon the success of VM, scholars have investigated whether VSM is even more effective in teaching skills to children with ASD. Ohtake et al. (2013) specifically looked at the effects of VSM on reducing the deficits associated with ASD. The weakness identified by Ohtake et al. was the lack of available programs or tools to help children with ASD with social skills. Rather than examine social skills as a whole,

however, they focused on task-avoidance behaviors. Participants were four elementary-aged students, two of whom showed positive changes following VSM, one who showed positive changes upon modification of the VSM, and one who showed no improvement whatsoever. They found participants either wanted to collaborate with a teacher or someone else experienced in working with children who have ASD or were teachers themselves who wanted to see a program in place. These weaknesses point to ideas for further improving research.

VSM use has been beneficial in increasing a variety of individual abilities, including behaviors. In reviewing the history of ASD research with young children, Thompson (2013) assessed past situations, how far knowledge has advanced, and the challenges researchers continue to face. As Thompson revealed, the past 30 years began with little growth in research on children with ASD and improvements in their daily lives, which has only begun to change in the past decade. Making early ASD diagnoses has led to discoveries and new approaches, such as advanced therapies. Improvements include children and adults with ASD no longer being institutionalized, but instead leading more productive lives because of early diagnosis and intervention.

The benefits of VSM extend beyond social skills. Gelbar et al. (2012) conducted a review of empirical research to assess the success of VSM as a means of intervention for individuals with ASD. The researchers looked at a range of skills, including communication and language, behavior, and both functional and social skills. Gelbar et al. identified VSM as a positive intervention approach for people who have ASD, analyzing past data to identify suggestions for further research. Gelbar et al. found that

replacing a negative behavior with VSM intervention improved participant performance on the targeted task; however, because the researchers did not incorporate all ages in their study, generalization across age ranges is limited.

Even with such advancements, a variety of research gaps remain, indicating the need for further study. It is essential to look at past research to see how theories and findings have developed and changed over time, including those regarding the effectiveness of VSM. There is enough research showing that VSM works for children and young adults who have ASD, but data are lacking in other areas, such as social skills (Gelbar et al., 2012). Therefore, it is critical to study the use of VSM, adding to future research through idea expansion and growth. This study will be unique while remaining connected to previous research. Today, most children with ASD attend mainstream classes and pursue college, often thanks to advancements and improvements in research (Thompson, 2013). With early interventions, children diagnosed with ASD can experience greater progression earlier in life.

VSM and Social Interaction

In addition to showing success in modifying behaviors and basic skills, VSM has received study with regard to teaching social skills to children with ASD. Boudreau and Harvey (2013) looked at the effects of VSM on the social skills of children with ASD, more specifically, verbal statements to peers with the participant facing their peers, and independent verbal statements, such as asking peers to play. Three students with ASD watched videos of themselves taking part in social interactions. As captured on video, playtime interactions were markedly increased, approaching the skills displayed by non-

ASD students. At a 2-week follow-up, Boudreau and Harvey found a similarly high rate of interactions in two of the three students.

Even video game skills have shown improvement with the use of VSM. Kurnaz and Yanardag (2018) used VSM as a means of teaching active video game skills to children who have ASD. Four 7-year-old children with ASD participated in the study, which involved one-to-one training five times a week. In the videos, children watched themselves mastering a complex active video game involving 25 steps. Findings showed that VSM was an effective means to teach active video game skills to the children in this sample, suggesting positive results for children with ASD beyond those who participated in this study. As a result of their findings, Kurnaz and Yanardag recommended studying the use of VSM in similar areas, such as leisure and motor imitation skills.

Solo play is a big part of any child's recreational time, thus indicating a need to examine functional play skills. To examine the functional play skills of children with ASD, Lee et al. (2017) used VSM with three toys to assess a 5-year-old child with ASD. The child not only increased skills with each of the toys following VSM but maintained the skills 2 weeks post-intervention. In addition, the child's improved skills applied to toys not part of the original study, showing the transferability of skills learned through VSM. Thus, findings supported the use of VSM as a means to increase functional play.

An introductory component of social skills is social initiations, in which the child makes an effort to reach out to another. Kabashi and Kaczmarek (2017) conducted a multiple-probe, single-subject design to measure the impact of VSM on improving social initiations among three children with ASD. Using a baseline to assess improvements, the

researchers found VSM an effective tool in improving social initiations by children who have ASD. However, Kabashi and Kaczmarek noted that VSM alone was insufficient and that reinforcement, cueing, and prompting contributed greatly to the results. Buggey et al. (2016) used a single-subject, multiple baseline design with children with ASD, finding VSM beneficial in social initiations. The researchers applied VSM to four children, three with ASD and one with Down syndrome, with a mean age of 4.2 years. Based on improvements seen in all four children, Buggey et al. suggested further research specific to age and VSM efficacy. Strengths of their study included the use of multiple baselines and the participation of three children with ASD and one with Down syndrome; however, the child with Down syndrome could have swayed the results. In a similar study that also had three participants,

Schools and teachers must also accept responsibility for the social skills development of students with ASD. Schaeffer et al. (2016) used VSM as an evidence-based intervention to help a school with a long-overlooked implementation. The researchers asserted the importance of such intervention in helping children with ASD build social skills in the academic setting. Schaeffer et al. suggested the school under study impose a frequency table to collect data, as it was the easiest to use, and showed how beneficial VSM was for children with ASD. Schaeffer et al. further recommended implementing VSM in the classroom to meet the specific needs of each student, especially those with ASD.

Krumeich (2013) examined social interaction and VSM with middle school students with ASD, also with a multiple baseline approach. The researcher conducted a

qualitative study with multiple measurement points, including target skills, addressed strategies, academic impact, social impact, and autism communication impact intervention. Feedback from classroom teachers who administered the VSM was positive, with improvements in not only social skills and communication but academic performance and strategy as well. Even though Krumeich connected a study using the framework of Bandura's (1971, 1977) social learning theory, the researcher did not break down the findings into the areas of observation, something this researcher has done.

As with any other training efforts, it is vital to reinforce students' learning following VSM. In evaluating the use of VSM with children with ASD, Victor et al. (2011) looked at feedback and feedforward with two groups, children involved with recording and role play and children who did not engage in role-playing. With VSM, reinforcement is critical to obtain the desired outcome. In their study with multiple baseline approaches, Victor et al. assessed the impact of VSM on social engagement in children with ASD in school settings. Various interventions were successful in different areas, including using VSM in individuals with ASD.

Beyond basic interactions and skills, VSM has shown success in helping children to master complex activities involving multiple steps. Kurnaz and Yanardag (2018) taught multistep skills to four 7-year-old children with ASD in one-on-one training 5 days a week for several weeks. The researchers analyzed the effects of VSM through a multiple probe design with probe conditions across the four participants. The one-on-one nature of the study allowed for a more in-depth analysis of each individual, with specific steps for participants to follow consistently. Although Kurnaz and Yanardag observed

different skills before concluding that VSM was beneficial in improving them, the ideas—the benefits of acquiring new skills and using them—were the same. Drawbacks included results specific to one age group and participants with limited leisure skills who leaned toward sedentary behaviors.

Although some of the study designs and findings are similar, researchers have taken different approaches with both strengths and drawbacks. The studies of Krumeich (2013) and Lemmon and Green (2015) took place in a school setting, which is beneficial to see the effectiveness of research and learn areas in which VSM is constructive. Although Krumeich and Lemmon and Green focused only on children to add knowledge in a specific area and delivered accurate results with just one gender, they came to similar findings compared with other researchers. Additional validation of a study is necessary to confirm the methods and results. Buggey and Ogle (2013) conducted observations of four children, both in the classroom and on the playground. Although two settings worked well for executing the study, the researchers did not see the expected improvements. Buggey and Ogle suggested social skills merited more in-depth examination, as it is unclear whether such skills would have improved with a different age group. Although Lemmon and Green identified VSM as having a significant impact on behavior, they looked at only one preschooler who was exhibiting disruptive behaviors and being aggressive. Even though these findings are significant, it is again impossible to generalize with just one participant.

Similarly, Kurnaz and Yanardag's (2018) study involved four participants in one age group, which prevented generalizing the findings. Ohtake et al. (2013) had four

elementary-school children watch a video of a task they typically avoided, showing the student appropriately engaged in the work. The researchers found when students watched the video, their motivation to participate in the requested activity in the current setting increased. Drawbacks included that teachers were allowed to administer prompts and feedback as the students watched the video. Also, because some of the students viewed the video every day and others saw it less frequently, participant measurement did not take place on the same scale. Finally, Ohtake et al. did not collect data until after the VSM intervention, and the study was not long-term.

Other issues with prior research compared to the present study included having two options for data collection (Victor et al., 2011) and using two children in a school setting as opposed to children in a therapy program setting. Correlations between former and proposed research include a strong theoretical base and clearly described interventions for addressing behavioral problems. Victor et al. (2011) expanded on the knowledge of what would help autistic children live life more functionally. Even though a single-subject design was beneficial, it may have led to overestimating the change that occurred. Generalizable findings would also have been helpful, which Victor et al. did not accomplish.

The use of VSM with children with ASD has received research in various settings, contributing findings and limitations. Kurnaz and Yanardag (2018) looked at VSM as an effective tool for teaching video game skills, providing evidence for the usefulness of VSM and leading to further study in similar areas. Lee et al. (2017) identified the need for more research on the benefits of VSM with functional play skills.

Schaeffer et al. (2016) looked at their own and others' research to determine an effective strategy for implementing VSM in the school system. However, had they administered a questionnaire to schools interested in having VSM as a resource tool to see which approach the schools felt would be beneficial, they would have better known what would work for each school instead of making assumptions. Kabashi and Kaczmarek (2017) used VSM to help improve social initiations with a multiple-probe, single-subject design. A major strength of their study was that by using VSM, practitioners helped improve social initiations for children with ASD; a weakness, as the authors mentioned, is that VSM alone will not improve social skills. Participants are motivated by their needs and attention, as well, which can affect the treatment's outcome.

As Lemmon and Green (2015) noted, young children may find VSM highly beneficial in improving social skills. Krumeich (2013) discussed how VSM is essential for social change and is a key instrument for parents, teachers, therapists, and other providers. Buggey and Ogle's (2013) study is still important because I used it to determine a proper age range to analyze for this study, one that will allow future researchers to retest different age groups or conduct studies in another manner. Findings by Ohtake et al. (2013) are beneficial to the present study, as they show the success of VSM and that participants might change their behaviors in a natural setting through motivation. In two studies, Victor et al. (2011) contributed knowledge of the importance of VSM and exhibited improvements in social skills helpful for future research. Although Kurnaz and Yanardag (2018) observed different skills before concluding that VSM was beneficial in improving them, the ideas—the benefits of acquiring new skills and using

them—were the same. Lee et al. (2017) utilized VSM and functional play skills to help with a deficit known by many with ASD.

Other contributions come in the area of social initiations, the first step in exhibiting social skills. Buggey et al. (2016) used self-modeling to promote social initiations, which contributes to the knowledge base, as some studies in this area have been controversial. Schaeffer et al. (2016) selected their topic to help educators use VSM in the school system. Kabashi and Kaczmarek (2017) identified that because social initiation skills were challenging for children with ASD, it was important to help with improvements in this area. They also noted that VSM was a well-established intervention with promising results for people with ASD. The present study helps to expand on particular areas rather than one overarching category, such as eye contact, cooperative play, and reciprocal interaction.

Beyond the information presented in this literature review, there remain fields for exploration, such as the combination of social initiations, cooperative play, and reciprocal interaction. With their findings, Lemmon and Green (2015) illuminated the need for further research in the area of VSM and additional data collected on social skills, something also noted by other researchers. There is a need for more research on social interactions across different age ranges and with more participants overall, as exemplified by Lemmon and Green's study of only one participant at a single point in time. As mentioned, Buggey and Ogle (2013) discussed retesting social skills using VSM in an older population of children, which could help understand if a younger population is insufficient to study. Victor et al. (2011) discussed the importance of reinforcement for

children, using two children in their study and illuminating the need for more research with a greater number of children. Even the four participants in one age group studied by Kurnaz and Yanardag (2018) need further expansion in the future. Recommendations for future research from the HTP included helping to teach motor skills along with leisure skills and physical activity. The findings of Buggey et al. (2016) merit expansion to the effectiveness of these variables and others on children with ASD.

The more data collected on VSM, the greater the information known on more population and objectives. VSM and children with ASD were significant elements in other areas of study. In looking for an effective way for schools to implement VSM in the classroom, Schaeffer et al. (2016) identified VSM as an evidence-based intervention deserving more use in the school system. This is something that could use further study. Kabashi and Kaczmarek (2017) recognized watching one's own behaviors has a positive effect on attention and motivation to help with improving behaviors. To mitigate this weakness, future researchers should examine the characteristics and traits of participants with ASD to identify those who will most benefit from VSM.

VM and VSM Shortcomings

VM investigations have occurred primarily in research settings (Cardon et al., 2015). It is not as clear how effective the intervention is with children with ASD in community, school, or home settings because caregivers lack knowledge of this approach. Also, as the treatment is newer and every child is different, it is unknown how many treatments are needed to achieve successful skills acquisition. For this reason, Cardon et al. (2015) identified the need for training for the caregivers in their study. In a

2012 study, Cardon taught caregivers of four children to administer VM imitation training to assess the results. Although behavioral improvements appeared in all four children, one required more treatments than the others before displaying increased skills. Furthering this research, Cardon et al. administered a Google Docs survey to 161 parents of children with autism to assess their knowledge and perspectives of VM. For the intervention to be successful, caregivers needed appropriate training in VM use based on the findings of how researchers tested the participants.

Some researchers have conducted and published thorough literature reviews of their own. Kabashi and Kaczmarek (2017a) conducted a comprehensive literature review of 36 studies involving the effect of video-based instruction (VBI) on the social initiation skills of children with ASD. The scholars looked at a range of variables, including individual characteristics, type of video modeling (VM, VSM, or VSM as part of a treatment package), and other VBI uses. Results, although proportionally positive, were not universal across all studies and all children. In 39% of studies, improvements were not visible for all participants. Other findings showed support for some but not all modeled behaviors or returned inconclusive results or failures (Kabashi & Kaczmarek, 2017a). Perhaps most unfavorable to proponents of VSM were the findings from six studies specific to VSM, half of which showed no improvement in social initiations among children with ASD. Another drawback to VSM is its added time and cost. Accordingly, Kabashi and Kaczmarek advocated using VM instead of VSM when teaching social initiation among children with ASD.

Next, Kabashi and Kaczmarek (2017b) conducted their own qualitative study to assess the efficacy of using VSM with video feedback to teach social initiation skills to children with ASD. Their sample consisted of three preschool-aged children (ages ranging from 3 years, 9 months [two boys] to 5 years, 3 months [one girl]) who went to school at an autism therapy center. Only two children showed improvement in social initiation following the two treatments. The researchers then added prompting to the third child's intervention, which produced only modest progress that nonetheless fell below criterion. Thus, Kabashi and Kaczmarek concluded that not all children with ASD would benefit from VSM.

Moving out of the research setting into the classroom, La Spata et al. (2016) used teacher and parent reports to examine whether using VSM would lead to reduced externalizing behaviors. Observed were four students aged 7 to 8 years in either first or second grade. Although not specifically identified as having ASD, the children were all eligible for special education teaching and services. One factor in VSM's usefulness was the extent of the student's involvement; however, even that was insufficient to predict success. Although teachers observed fewer problem behaviors in three of the four students, these results were not reflected at home, leading La Spata et al. (2016) to declare the results inconclusive. Ultimately, they questioned the efficacy of VSM when used with younger children diagnosed with behavioral and emotional disorders.

Nonvideo Modeling Interventions

Modeling interventions beyond VM and VSM include play-based interventions, such as those with video games. MacCormack and Freeman (2019) used a play-based

intervention to observe social competence in four young adolescent boys with ASD. The pilot study entailed the administration of both structured and free play of the Minecraft video game to assess the children's social competence. A negative aspect was that since there was free play, it was hard to identify benefits due to the youth playing without roles or goals. A positive point was that the eight hour-long sessions allowed for a variety of data collection in regard to video modeling, adult and peer facilitation, and supervisory mediation. Little et al. (2019) researched several different modeling approaches that followed the same theoretical approach and methodology. By examining each approach, Little et al. showed the need for more research on modeling interventions to provide stronger evidence to support modeling-type interventions.

Despite these studies not involving VSM, social skills interventions were an essential topic of study. MacCormack and Freeman (2019) studied ways to improve social competence in children with ASD through video games. Although the use of video games is different than VSM, the study showed kids could focus on a task even when they have ASD. Such findings, in turn, help future researchers who seek to explore the effect of modeling on the social skills of children with ASD. Despite the contributions of past researchers who have studied social skills in children with ASD, however, it is apparent that gaps exist (Little et al., 2019).

Video Self-Modeling and Social Skills

Progress in using VSM to improve skills has appeared in existing research; however, scholarship is not significant enough to prove the VSM intervention is effective for children with ASD (MacCormack & Freeman, 2019). Although Little et al. (2019)

found modeling has shown significant benefits when used with children with ASD, the scholars noted the need for more research to prove the effectiveness of modeling strategies such as VM and VSM, as reflected in the present study.

Summary and Conclusions

Major themes emerged following a review of the literature regarding VSM and children with ASD. Most significantly, researchers have proven VM and VSM both significant and useful for children with ASD. Even so, because VSM is a relatively new technique, areas for examination remain, such as social initiations, cooperative play, and reciprocal interactions. Thus far, VSM has been an effective tool to help children with ASD in areas that include behavior, multiple task steps, and others; what is unknown, however, is if VSM helps these children with their social skills, as it does for children without ASD. The present study contributes to the existing research regarding VSM and children with ASD by examining its use in improving eye contact, cooperative play, and reciprocal action. This study adds to the literature regarding the difference in the combination of variables, age group, and gender, as well as VSM's differences from VM and other learning interventions.

In Chapter 3, I discuss the methodology for answering the research questions. I present the research design and rationale, the data collection methods, threats to validity, and ethical considerations, highlighting the importance of HTP and IRB approval. I also detail the population demographics and sampling procedure.

Chapter 3: Research Method

ASD affects one out of 68 people in the United States, impacting their ability to interact with others and learn from those encounters. As increasing numbers of children with ASD attend mainstream public schools, it is vital to find better ways to help them assimilate and learn. The purpose of this quantitative multiple baseline study was to determine if there is a relationship between VSM treatment and improved social interaction through eye contact, cooperative play, and reciprocal interaction in children with ASD.

In Chapter 3, I discuss in further depth how I addressed the research question according to the research design and rationale for the present study. I also detail the methodology for the study, including sampling and recruitment procedures. I define the independent and dependent variables as VSM and social skills, respectively, and present my process for data analysis. A review of threats to validity and ethical procedures concludes the chapter.

Research Design and Rationale

For this study, VSM was the independent variable, and social skills (eye contact, cooperative play, and reciprocal interaction) were the dependent variables. The use of a single-subject, multiple baseline design was appropriate to answer the research questions of whether children with autism spectrum disorder exhibit a significant increase in playground social skills (eye contact, cooperative play, and reciprocal action) after VSM treatment and provided numerically represented results to reject or fail to reject the null hypotheses. After the HTP leaders in the partner organization administered VSM to the

three children with ASD and recorded the videos, I conducted observations of these videos to see if there had been an increase in the skills before the VSM treatment.

Researchers (Buggey & Ogle, 2013; Gelbar et al., 2012) have proven VSM effective in certain situations thus far in the general population; therefore, it seemed promising that VSM would have a positive impact on the social interactions of children with ASD. Few studies exist in this particular area, and no researchers used this study's specific methods and variables (see Schaeffer et al., 2016). Researchers have assessed the use of VSM in broader circumstances through qualitative and quantitative approaches. In this study, I used a single-subject, multiple baseline design with a specific focus on social skills. The gap in literature remained in the vast number of untested areas regarding the effects of VSM.

Buggey and Ogle (2013) found that social interactions improved relationships with peers, family members, and others. Eberle (2014) identified social interactions as helping children build relationships and make friends with various individuals. The more research compiled supporting the effectiveness of VSM with the autistic population, the better-equipped facilities will be to provide effective programs for these children. The goal of this study was to see how children with ASD responded to VSM and if it had a significant effect on modeling positive behavior.

Methodology

Population

The population under study was children diagnosed with ASD who lack social skills. The sample of three came from a population of children with ASD attending the

HTP who are nonverbal and exhibit difficulties with social skills, specifically eye contact, cooperative play, and reciprocal interaction. The HTP leaders selected three boys ages 5 to 10 years who met these criteria.

Sampling and Sampling Procedures

Many types of sampling strategies are available to find participants. To conduct this study in cooperation with the HTP, the HTP leaders used convenience sampling, selecting participants based on availability and qualifications (see Schaeffer et al., 2016). The HTP leaders recruited participants by sending invitation letters to parents of children who met the study criteria of being male youth diagnosed with ASD, nonverbal, between the ages of 5 to 10 years, and lacking social skills. The letter explained the purpose of the study, specific procedures, and possible benefits not only to their sons but to other children with ASD. Since more than three parents expressed interest in having their children participate, the HTP selected the first three qualifying responses. Convenience sampling was appropriate, given that the three 5- to 10-year-old boys attended the HTP, and their parents needed to approve their participation.

Procedures for Recruitment and Participation

Recruitment occurred via letters to parents sent by the HTP leaders on my behalf, describing the study procedures and objectives, clarifying the population, and soliciting volunteers. Upon giving verbal permission, parents received an informed consent form explaining how I would assess social skills using an observational approach to evaluate how much interaction with others took place. By signing the consent form, parents also agreed to the video recording of their child on the playground, knowing that I would use

recordings only for coding and would destroy the files as soon as I completed coding. Data collection entailed counting how many times each participant interacted with another child in increments of 15 seconds, tallying results both before and after the VSM treatment video. I counted one social skills event for every 15 seconds of interaction, with tallies compiled at the end of the observation. Data analysis occurred through a single-subject, multiple baseline design and before-and-after treatment analyses. After completion of the study, the HTP debriefed parents, restating the purpose of the study and the intended outcome; children had the option to attend the debriefing session. Parents received a summary of the final study results. There were no follow-up procedures planned.

I used a quantitative research approach with a single-subject, multiple baseline design to study the relationship between VSM treatment and social skills acquisition. I conducted two rounds of post-VSM observation to determine if social skills had increased by evaluating how much interaction took place between study participants and other children. Demographic data came from the HTP leaders, listing each participant's age, gender, and ethnicity, information I can use for future studies.

Intervention

Individually, the three children received VSM treatment through the HTP, watching themselves on video demonstrating successful social skills. Following the introduction of VSM treatment, I gathered the videos to perform observational data two times over 7 days to ensure accurate data. Measurements, such as questionnaires or scales, were not a part of the study. Test-retest results came from observing children at

the playground who have ASD and lack social skills. I measured each child from baseline to intervention and from intervention to follow-up, with varying baselines anticipated for each participant.

Operationalization

Operational definitions for the independent and dependent variables are as follows: VSM is a type of observational learning in which people observe themselves on video performing a targeted skill after which they imitate the skill with confidence in their abilities (Gelbar et al., 2012). Social skills are interactions with one or more others (Gelbar et al., 2012); in this study, the social skills were eye contact, cooperative play, and reciprocal interaction.

The HTP observers recorded the three participants two times to ensure accurate data collection, which helps with internal validity. I measured the number of times each child engaged in social interactions with other children through the recordings. To qualify as social interaction, a child must have engaged with another for at least 15 seconds, including eye contact, cooperative play, or other reciprocal interaction. Eye contact occurs when the participant meets another child's gaze. Cooperative play occurs when a participant engages in a playground activity with another child. Forms of reciprocal action include offering to take turns on playground equipment or helping another child in any way. I then computed the total number of interactions by each participant before and after VSM. Data analysis occurred on each child separately and compared to the other children in the study.

Data Analysis Plan

I entered data and created a scatterplot graph in Microsoft Excel, calculating the effect of the analysis. I measured the effect sizes of the changes with a confidence interval of 95%. I used the results to answer the four research questions and hypotheses:

RQ1: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of eye contact after video self-modeling treatment?

$H_0$1: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% difference in playground eye contact after video self-modeling treatment.

$H_1$1: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground eye contact after video self-modeling treatment.

RQ2: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of cooperative play after video self-modeling treatment?

$H_0$2: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% difference in playground cooperative play after video self-modeling treatment.

$H_1$2: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground cooperative play after video self-modeling treatment.

RQ3: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of reciprocal action after video self-modeling treatment?

H_1^3: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground reciprocal action after video self-modeling treatment.

H_0^3: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% difference in playground reciprocal action after video self-modeling treatment.

RQ4: Do children with autism spectrum disorder exhibit a marked increase in playground social skills (eye contact, cooperative play, and reciprocal action) after video self-modeling treatment?

H_1^4: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% increase in playground social skills (eye contact, cooperative play, and reciprocal action) after video self-modeling treatment.

H_0^4: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% increase in playground social skills (eye contact, cooperative play, and reciprocal action) after video self-modeling treatment.

I analyzed data collected through observations of the video of the three children with ASD who attend the selected HTP. The HTP program leaders implemented and administered a procedure for VSM with a multiple baseline design to improve social skills. The observers measured social skills from the baseline, intervention, and post-intervention/follow-up. After inputting data into Microsoft Excel, I created a graph to provide a visual comparison of results, with the x-axis representing the time in seconds the child interacted with another child and the y-axis showing the number of interactions.

I charted performance at two points, before and after VSM. I saw the HTP observers' comparisons through individual data collected using a single-subject, multiple-baseline approach.

Because the data included information for each participant, including demographics, age, and ethnicity, there was greater internal validity. The HTP observers kept the data points at a stable baseline before beginning the intervention. See the appendices where I present observations collected before and after the intervention. I stored all physical records in a locked drawer and digital data in a password-protected file and will shred all documents and delete all files after 5 years.

After assessing for an overall difference in the scores, I compared the children to see if there were similar findings across participants. With the comparison, I identified any specific significant differences between the children. Because gender and diagnosis were the same across the sample, ethnicity and the slight age variations were areas of variability. I looked at the child's overall improvement and the effect of the VSM, not the child's qualities.

After data collection and interpretation, I created a graph for each child on each day to represent before and VSM introduction to show any improvements in social skills. Rejection of the null hypothesis is necessary if the p value is less than or equal to alpha; alternately, if the p value is more significant than alpha, there is insufficient evidence to reject the null hypothesis. An alpha equal to 0.05 with a 95% confidence interval allowed me to interpret the results to determine if a significant difference existed in the data collected.

Threats to Validity

External Validity

One threat to external validity, pre-VSM exposure to the park, could have caused interference through familiarity with the surroundings and/or other children (see Boudreau & Harvey, 2013). To address this concern, the HTP observers gathered data on multiple days at multiple parks to ensure participants encountered a variety of children at the playground over the week. The use of convenience sampling is another threat to external validity (Gelbar et al., 2012). Because showing the video every day could affect external validity, children viewed it on different days over 5 days. I determined the effect size following graph creation and data analysis.

Internal Validity

There was a possibility of participants knowing someone was videoing (Buggey & Ogle, 2013). To mitigate this risk, the HTP observers recorded video at least 20 feet away from the children on the playground, remaining inconspicuous to reduce interference. I used the HTP video-recorded interaction to confirm my observations, particularly regarding eye contact. Two HTP representatives independently reviewed the recordings, establishing interrater reliability. Although I could not assess participants' achievement, past researchers showed VSM's success in other areas (Lemmon & Green, 2015). To mitigate any sense of expectation by participants, which would undoubtedly pose a threat to internal validity, the observers recorded the interactions on nonconsecutive days.

Construct Validity

As I performed no testing in this study, construct validity was not an issue.

Ethical Procedures

The HTP leaders granted permission for me to observe the videos from the study and provided access to the recordings. In addition, parents reviewed and signed informed consent forms (see Appendix A), giving permission for their children to take part in the HTP study and for me to watch the recordings from the playground interactions (see Appendix B). Program leaders created each VSM file and showed it to the children. Because my role in this study was that of observer, there was no treatment for the children on my behalf or interaction. I obtained approval from Walden University's Institutional Review Board (IRB #02-15-21-0429419) before beginning the study. Participants were free to leave the study at any time without penalty, in which case the HTP leaders would have selected a replacement from the chronological list of qualifying responses. There were no further ethical issues with using human participants in this study. The HTP leaders had guidelines for confidentiality and keeping records safe.

Ethical Issues in Data Collection and Intervention Activities

The main ethical concern related to data collection and intervention activities was that the children might not have paid attention when the HTP showed the VSM, which could have affected their moods and the data. When the children went to the playground, they might not have wanted to participate or engage in play, which could have caused a fluctuation in data collection over the different days. A child could have had a negative experience on the day they viewed the VSM, causing a mixed reaction. Another

possibility was that a child might have felt unwell or dropped out early, in which case the HTP leaders would have selected additional participants.

Ethical Issues in Data Analysis and Interpretation

The HTP personnel coded the observational data anonymously by assigning each participant an identifying letter: A, B, or C. By assigning identifiers, the workers helped protect the children's identities and removed the possibility of unintended bias when calculating data. Data anonymity was a means to maintain the confidentiality of the children, especially as they are in a habilitation program together. Observational data are in a locked drawer, with electronic data saved on a password-protected computer. During data collection, I kept materials in a folder, properly coded to preserve participant anonymity, and returned all files to the locked drawer between rounds of observation. Data destruction will take place 5 years from the publication of the results.

Other Ethical Issues

Other ethical issues could have arisen from the HTP's participation in the study. For example, program leaders could have administered the VSM with bias, as they had a vested interest in wanting the child to succeed. To avoid additional ethical concerns, the leaders did not reveal participant information, including names, when compiling notes and writing and disseminating results.

Summary

The purpose of this quantitative multiple baseline study was to determine if there is a relationship between VSM treatment and improved social interaction through eye contact, cooperative play, and reciprocal interaction in children with ASD. I measured the

results from posttreatment playground recordings, using the parents' signed informed consent to ensure a clear understanding of confidentiality and the participation process. The HTP personnel conducted score tracking and analysis over 3 weeks, performing and analyzing the collected data =using a multiple baseline approach. I used manual data collection and coding to measure and provide descriptive data on participants' improvement.

In Chapter 4, I discuss treatment administration and data collection. I provide a detailed overview of the results and an evaluation of statistical assumptions and statistical analysis findings.

Chapter 4: Results

ASD is a pervasive developmental disorder affecting one in 68 individuals each year (Thompson, 2013), creating a greater need for interventions to improve the individuals' functioning. The rise in ASD diagnoses since 2013 has led to an increased awareness of the disorder, including the lack of effective interventions for learning essential skills. Current treatments to help children with ASD develop adaptive skills are insufficient, indicating the need for more beneficial assistance. The purpose of this quantitative multiple baseline study was to determine if there is a relationship between VSM treatment and improved social interaction through eye contact, cooperative play, and reciprocal interaction in children with ASD. VSM was the independent variable, and eye contact, cooperative play, and reciprocal action were the dependent variables. The dependent variables were appropriate based on previous social skills researchers who indicated a lack of literature on those variables.

Four research questions guided this study, along with four hypotheses.

RQ1: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of eye contact after video self-modeling treatment?

$H_0$1: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% difference in playground eye contact after video self-modeling treatment.

$H_1$1: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground eye contact after video self-modeling treatment.

RQ2: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of cooperative play after video self-modeling treatment?

$H_0$2: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% difference in playground cooperative play after video self-modeling treatment.

$H_1$2: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground cooperative play after video self-modeling treatment.

RQ3: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of reciprocal action after video self-modeling treatment?

H_1^3: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground reciprocal action after video self-modeling treatment.

H_0^3: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% difference in playground reciprocal action after video self-modeling treatment.

RQ4: Do children with autism spectrum disorder exhibit a marked increase in playground social skills (eye contact, cooperative play, and reciprocal action) after video self-modeling treatment?

H_1^4: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% increase in playground social skills (eye contact, cooperative play, and reciprocal action) after video self-modeling treatment.

H_0^4: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit less than a 40% increase in playground social skills (eye contact, cooperative play, and reciprocal action) after video self-modeling treatment.

In Chapter 4, I present the data collection and analysis procedures for this multiple baseline study. I provide a thorough discussion of the results. I conclude the chapter with a summary.

Data Collection

The HTP leaders collected the information and provided the videos for each participant. I performed two observations of the videos over 7 days to ensure accurate data. Score tracking and analysis took over 3 weeks. I collected and analyzed the video data using a multiple baseline approach from the HTP program leaders and then observed the videos. The time frame for the HTP's recruitment was 2 weeks, with the responses taking place over 1 week. There were no discrepancies in data collection as the HTP leaders provided the videos I observed, and the HTP providers also reported no discrepancies.

Three boys aged 5, 8, and 10 participated in the study. All three boys participated in the HTP program. The boys were diagnosed with ASD, were nonverbal, and exhibited difficulties in social skills in the specific areas of making eye contact, cooperative play, and reciprocal interaction. The 5-year-old boy was of Hispanic descent, and the 8- and 10-year-old boys were White.

According to the CDC (2019a), among 8 year olds diagnosed with ASD, 18.5 per 1,000 are Non-Hispanic White, and 15.5 per 1,000 are Hispanic. The ethnic differences

could result from diversity, an important consideration for adequate sampling. Overall, the sample representation of the population was accurate, with three more White 8 year olds per 1,000 having ASD than Hispanic children.

I visually inspected the line graphs to determine whether children with ASD exhibited increases in playground social skills of eye contact, cooperative play, and reciprocal play after VSM treatment. I conducted one-sample *t* tests to compare the post-VSM eye contact, cooperative play, and reciprocal play metrics to the null hypothesized values of 5.6, 2.34, and 0, respectively.

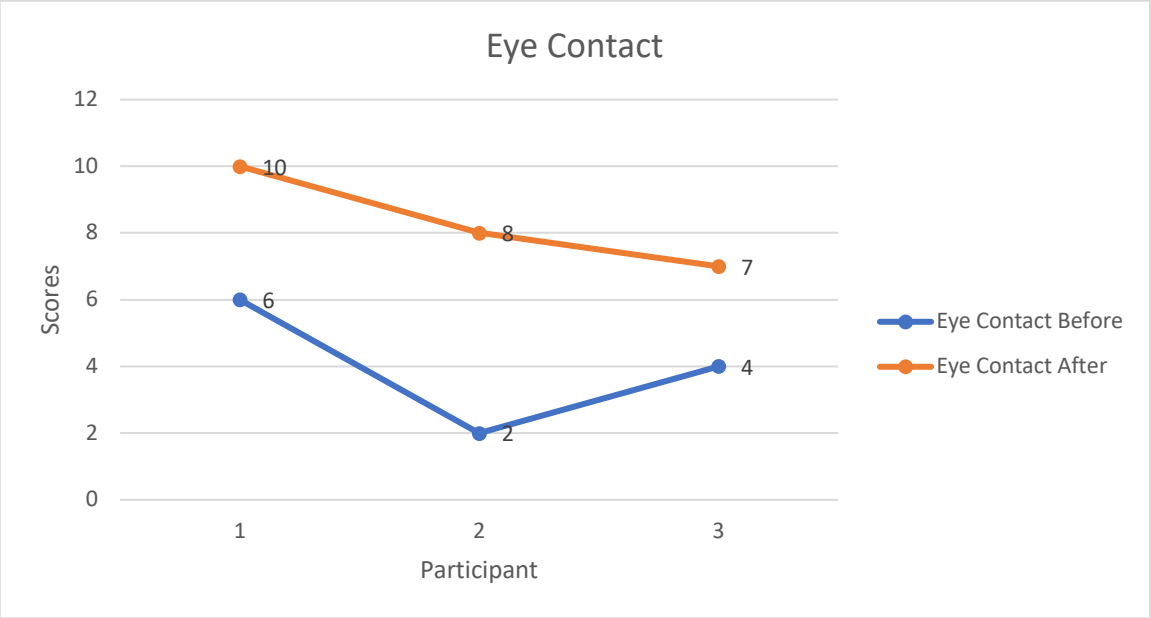
Research Question 1: Results

RQ1 was: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of eye contact after video self-modeling treatment? The hypothesis I tested was: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground eye contact after video self-modeling treatment.

As shown in Figure 1, the eye contact for each of the three participants was higher postintervention than preintervention. Thus, eye contact improved as predicted. Furthermore, the 4.33 average increase was slightly higher than the expected 40% increase (a mean of 5.6), $t(2) = 3.10$, $p < .09$.

Figure 1

Video Self-Modeling Treatment Differences Over Time: Eye Contact



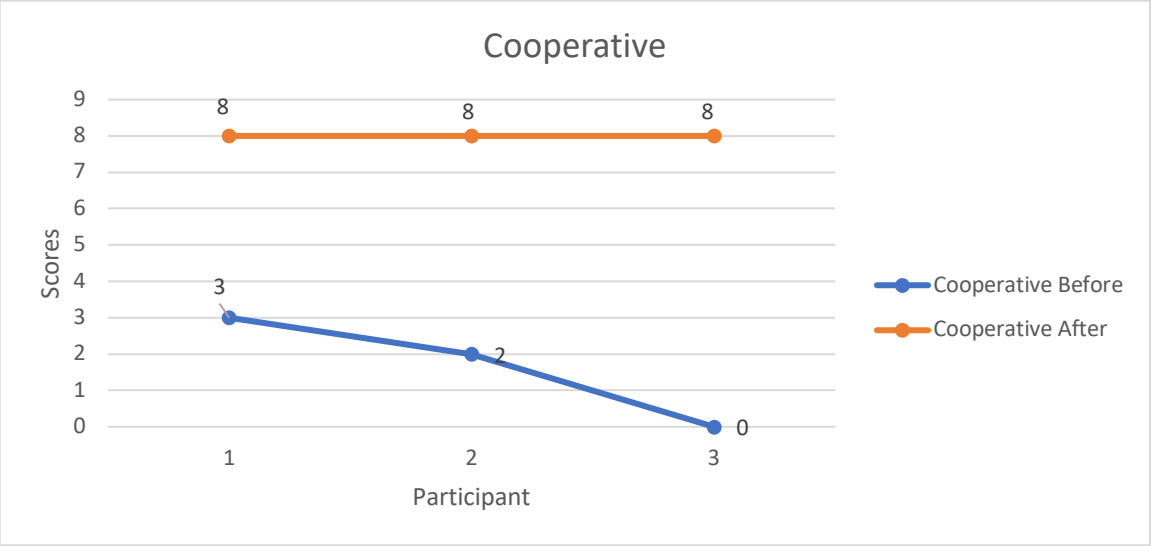
Research Question 2: Results

RQ2 was: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of cooperative play after video self-modeling treatment? The hypothesis texted was: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground cooperative play after video self-modeling treatment.

As shown in Figure 2, the cooperative play for each of the three participants was higher post-intervention than pre-intervention. Thus, cooperative play improved as predicted. I could not conduct the one-sample *t* test to determine whether post-treatment cooperative play score was significantly higher than the expected mean at a 40% increase because the standard deviation for the post-treatment cooperative play mean was 0.

Figure 2

Video Self-Modeling Treatment Differences Over Time: Cooperative Play



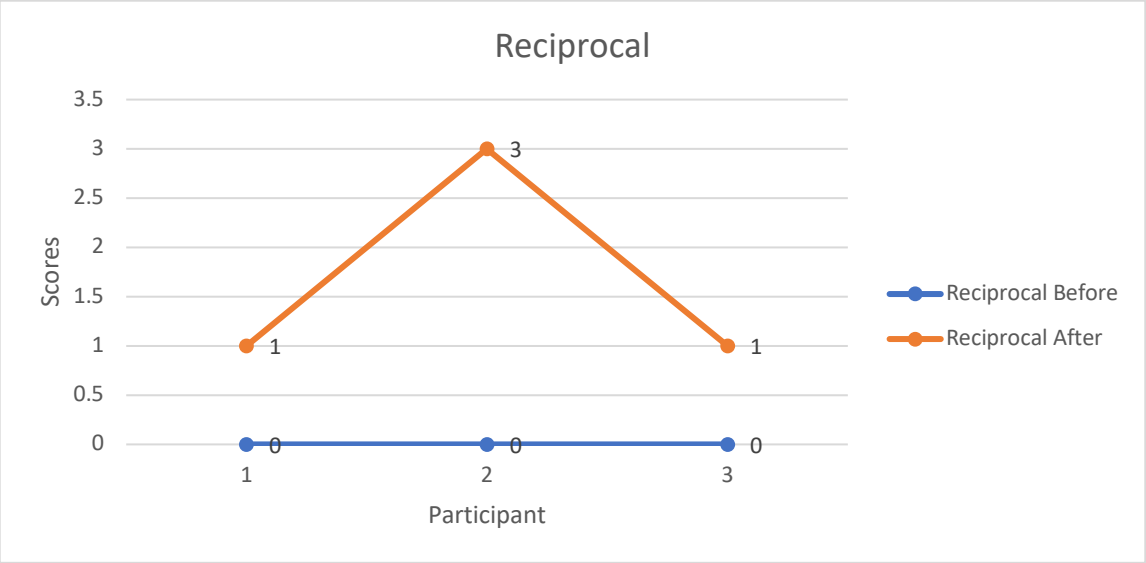
Research Question 3: Results

RQ3 was: Do children with autism spectrum disorder exhibit a marked increase in playground social skills of reciprocal action after video self-modeling treatment? The hypothesis I tested was: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% difference in playground reciprocal action after video self-modeling treatment.

As shown in Figure 3, the reciprocal play for each participant was higher postintervention than preintervention. Thus, reciprocal play improved as predicted. The 1.67 mean increase was higher than the expected 40% but was not statistically significant, $t(2) = 2.50$, $p < .13$.

Figure 3

Video Self-Modeling Treatment Differences Over Time: Reciprocal Play



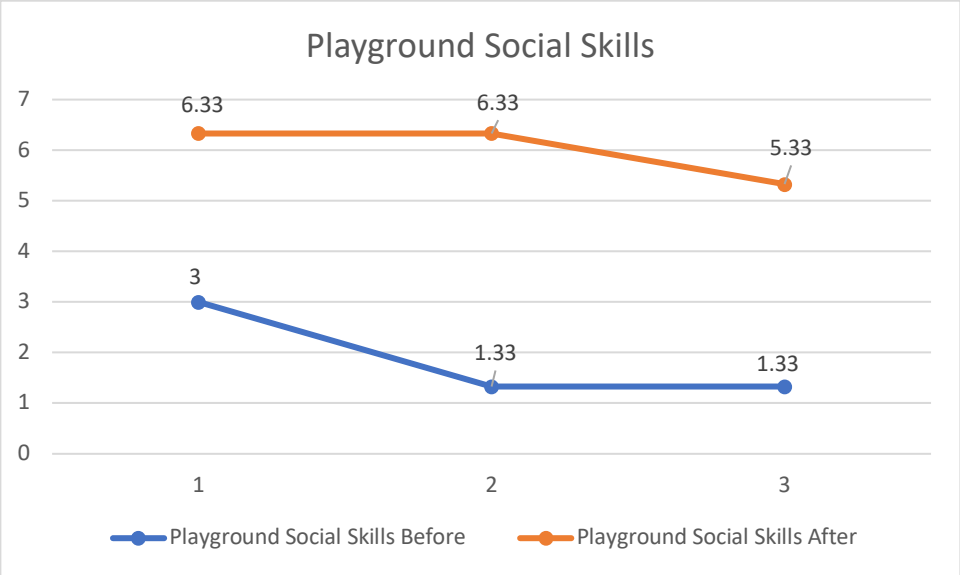
Research Question 4: Results

RQ4 was: Do children with autism spectrum disorder exhibit a marked increase in playground social skills (eye contact, cooperative play, and reciprocal action) after video self-modeling treatment? The hypothesis I tested was: Children ages 5 to 10 years diagnosed with autism spectrum disorder will exhibit at least an 80% increase in playground social skills (eye contact, cooperative play, and reciprocal action) after video self-modeling treatment.

As shown in Figure 4, the playground social skills for each participant were higher postintervention than preintervention. Thus, playground social skills improved as predicted. The 4.11 mean increase was higher than the expected 80% but was not statistically significant, $t(2) = 7.80$, $p < .01$.

Figure 4

Video Self-Modeling Treatment Differences Over Time: Playground Social Skills



I conducted a paired-samples *t* test to provide a more robust statistical examination of improvement over time. As shown in Table 1, I found statistically significant increases in eye contact and cooperative play (as noted by the asterisks) but not for reciprocal play.

Table 1

Pre- and Post-Video Self-Modeling Treatment Differences for Eye Contact, Cooperative Play, Reciprocal Play, and Playground Social Skills

		M	*N*	*SD*	*SE*	Mean difference (*t*)
Pair 1	Eye contact before VSM	4.00	3	2.00	1.15	4.91*
	Eye contact after VSM	8.33	3	1.53	0.88	
Pair 2	Cooperative play before VSM	1.67	3	1.53	0.88	7.18*
	Cooperative play after VSM	8.00	3	0.00	0.00	
Pair 3	Reciprocal action before VSM	0.00	3	0.00	0.00	2.5
	Reciproal action after VSM	1.67	3	1.15	0.67	
Pair 4	Playground social skills before VSM	1.89	3	0.96	0.56	8.49**
	Playground social skills after VSM	6.00	3	0.58	0.33	

Note. *$p < .05$, **$p < .01$

Summary

After analyzing the data, I found the hypothesis was partially supported for two variables: eye contact and cooperative play. Although significant, the increase for both eye contact and cooperative play was not enough above 80% to fully support the alternative hypothesis; however, two of the three variables (eye contact and cooperative play) were high enough to reject the null hypothesis of an increase of at least 40%. Only the analysis for reciprocal action supported the null hypothesis with significance but not above the 40% necessary to reject the null hypothesis. Despite evidence of changes for the three variables after VSM treatment, there was insufficient support to accept the alternative hypothesis for all three variables (eye contact, cooperative play, and reciprocal action).

Even with the inability to fully support the hypotheses, I contributed to the literature and helped future researchers. With the results, I provided a framework for determining the effect of using the same three variables in future studies. In Chapter 5, I present a further interpretation of the findings, the study's limitations, recommendations, implications, and a conclusion.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this quantitative multiple baseline study was to determine if there is a relationship between VSM treatment and improved social interaction through eye contact, cooperative play, and reciprocal interaction in children with ASD. I analyzed social skills data collected by the HTP leaders. VSM was the independent variable, and eye contact, cooperative play, and reciprocal action were the dependent variables. Eye contact is defined as a child looking at another child, cooperative play occurs when the child plays with another child, and reciprocal action is when two or more children play together doing the same thing. I selected the dependent variables based on previous social skills researchers who indicated a lack of literature on those variables.

Scientists use quantitative research methods to uncover measurable data and perform statistical analysis (Goertzen, 2017). Quantitative data answer *what* or *how* questions regarding amounts, percentages, and proportions. Behaviors and trends might become clear following quantitative analysis. This approach was appropriate for the current study. Using the quantitative design, I made comparisons through observation, a data collection method used for primary analysis in past research and secondary analyses.

VSM is a cognitive behavioral treatment model that involves creating a video of an individual completing the targeted task and editing the file to show participants accurately performing the targeted behavior (Victor et al., 2011). Boudreau and Harvey (2013) demonstrated that VSM treatment is successful for improving social skills in children with ASD. Practitioners can use VSM as a teaching instrument for viewers to successfully perform the end task (Schaeffer et al., 2016). As individuals view the videos,

they gain awareness of and self-efficacy in the targeted task, which increases their likelihood of completing the task independently (Gelbar et al., 2012). With such promising future applications, it appears that using VSM can support individuals' independence.

The HTP leaders compiled primary data through playground videotaped observation, which I subsequently reviewed and analyzed. My role in this study was limited to observing the archival video recordings collected during the HTP program; there was no treatment conducted on my behalf or by me. Data collection on the playground occurred at two time points, before VSM administration and after showing VSM in the therapy program, for the observers to assess differences in the participants' interactions. HTP scorers used a frequency table to record, in increments of 15 seconds, when participants engaged with another child, made eye contact, played, and interacted, all actions within the scope of social skills. The HTP leaders used a multiple baseline design to assess how long each child took to complete each phase of the study. Separate observation and analysis of three participants occurred, followed by a comparison among the three participants. To ensure participant privacy, the HTP leaders maintained all data in a secure folder, which they locked after each session.

ASD is a pervasive developmental disorder affecting one in 68 individuals each year (Thompson, 2013), indicating a great need for more interventions. With the rise in ASD comes increased awareness but insufficient interventions to improve skills. The available treatments for children with ASD are insufficient for the growing population of diagnosed individuals, indicating the need for more research and treatment in this area

(Ohtake et al., 2013). Although VSM could be an effective treatment for children with ASD, the breadth of skills assessed by researchers thus far is limited. Ohtake et al. (2013) found that children with ASD need a program to develop social skills, a domain in which most are deficient. I addressed understudied skills in research showing the benefits of VSM.

Children with ASD lack various skills, especially social skills, and more interventions are needed to improve in this domain. Observing nonverbal children is one way to advance knowledge in this area by seeing what skills are lacking and what treatments may help. Although previous researchers had studied the use of VSM in other areas of development, they had not examined the specific use of VSM related to social interactions for children with ASD. Eye contact, cooperative play, and reciprocal action were underresearched yet essential social skills to target in VSM research. More children with ASD attend mainstream schools than specialized schools and need to obtain the skills necessary for life success. Because VSM techniques are newer than other well-established methods, there have been limited participant studies; even so, data have indicated the potential efficacy of this intervention (Boudreau & Harvey, 2013). VSM's benefits and use merited exploration.

With this study, I added to the literature on VSM as an intervention for individuals with ASD. I examined VSM treatment within the context of a rehabilitation program for children with ASD, focusing on the social skills of eye contact, cooperative play, and reciprocal action.

Video Self-Modeling Strengthening Daily Skills

Researchers have explored the needs of children with ASD compared to their non-ASD-diagnosed peers. Ostmeyer and Scarpa (2012) focused on participatory action research, in which all therapy program stakeholders can provide input for facilitating an intervention. Ostmeyer and Scarpa aimed to implement a program to help children with ASD develop social skills in school and strengthen daily skills. Other researchers (e.g., Gelbar et al., 2012; Thompson, 2013) discussed improvements in various skills.

Scholars have examined other areas of social skills, such as in the school setting, and strengthening daily skills. Gelbar et al. (2012) investigated the impact of VSM treatment to identify its benefits for various skills, including social skills. The researchers found that VSM led to improved social skills, a finding supported by this study's results. Thompson (2013) reviewed past studies of children with ASD to determine how therapies changed over the years and what therapy challenges researchers should explore. Amid rising rates of ASD diagnosis, more children need help developing hard and soft skills, such as social skills. Following a comprehensive review, Thompson found that providing advanced therapy for children with an early ASD diagnosis leads to more progression. With the present study's results regarding the benefits of VSM on social skills, I supported Thompson's findings.

Video Self-Modeling After Video Modeling With Skills

VM is similar to VSM but omits the self-modeling component. Although beneficial, VM lacks a crucial element: the children observing themselves. Thompson (2013) identified differences between VM and VSM and the benefit for children and

adolescents with ASD. Lee et al. (2014) found that both VM and VSM were useful in expanding skills, including social learning, behavior, and community skills. In line with social learning theory (Bandura, 1969), both VSM and VM are beneficial. Overall, VSM was more beneficial for improving social skills.

Video Self-Modeling and Skills Improvement

Boudreau and Harvey (2013) explored VSM's effects on social interactions in three young children with ASD who demonstrated adequate vocal skills. Boudreau and Harvey conducted their study in a school setting and found an increase in social interactions. In comparison, Ohtake et al. (2013) observed task avoidance behavior in school among children with ASD. The researchers found that the children were motivated to watch the video and completed the typically avoided task. Both studies showed a relationship between VSM and improvement in children's skills.

According to Thompson (2013), despite growing VSM research regarding social interactions, further exploration is still needed. My study is the only study specific to VSM in a rehabilitation therapy program to improve social interactions among children with ASD. As Boudreau and Harvey (2013) found, social interactions assist children in improving relationships and making friends. Because ASD is increasingly widespread, more children with ASD interact with people in school, including peers, teachers, and others (Gelbar et al., 2012). In this study, I examined the results of using VSM to model positive behavior for children with ASD.

There is a need for effective interventions to help children with ASD develop social skills (Buggey & Ogle, 2013). In this study, I observed VSM responses specific to

social skills interactions, publishing my findings to help children with ASD lead functional lives. With this study, I added to the research and understanding of how VSM can help in improving skills (e.g., eye contact, cooperative play, and reciprocal action) imperative for successful functioning in school, at home, and in other social situations (see Eberle, 2014). I also contributed to existing knowledge with an expanded understanding in areas beyond social skills, such as attention span.

The null hypothesis was rejected except for the variable of reciprocal action. The alternative hypothesis was also rejected. The results showed increases in eye contact and cooperative play among the children; however, these increases were not statistically significant. The results for these two variables fell between the 40% and 80% predicted differences and not over the predicted 80% difference stated in the hypothesis.

Interpretation of the Findings

The data yielded results that failed to support most hypotheses; the exception was reciprocal action, which supported the null hypothesis. Eye contact and cooperative play were neither supported nor rejected, as both fell above the 40% as stated in the null hypothesis and below the 80% specified in the alternative hypothesis. My findings differ from past researchers', who did not specify a percentage gap in the null and alternative hypotheses (40% and 80%, respectively). The large percentage gap between the null and alternative hypotheses necessitated a different approach to rejecting or accepting the hypotheses. With this study, I extended the knowledge in the discipline, showing that VSM can be effective, albeit with different parameters for improvement. Researchers should examine eye contact and cooperative play further using different parameters to see

if there are benefits with VSM. With my results, I provide for future researchers to determine how the variables were or were not significant, indicating which variables require further study. Most researchers have shown VSM to be beneficial for learning other skills, as discussed in Chapter 3. From the present study's results, I provided information on three previously unexplored variables (eye contact, cooperative play, and reciprocal action) among children with ASD. Future researchers should rework the hypotheses to remove the gap in the percentages.

The theoretical framework for this study was social learning theory, by which Bandura (1977) posited that learning occurs through observing others' behavior. The children in this study exhibited changed actions after VSM treatment, thus supporting Bandura's assertion of learning based on observation. There were advancements in skills after VSM viewing; however, except for reciprocal action, the data were not significant above 80% of the criteria in the hypothesis. Social learning theory was an appropriate framework, as indicated by improvements in the other two skills, eye contact and cooperative play. Therefore, applying social learning theory would be appropriate for future researchers.

Limitations of the Study

There were a few limitations to this study. First, the sample was small, with only three boys observed. The three boys met the criteria of being between 5 to 10 years old, nonverbal, male individuals, attendees of the same HTP, and lacking social skills. By using these specific parameters, the HTP leaders did not permit generalizability across different age groups. Another limitation was focusing on only three social skills: eye

contact, cooperative play, and reciprocal action with other children. I cannot determine if participants would have attained these skills independently or if the study's results could apply to other children, programs, environments, or locations. The children might have gained these skills independently during the study period; thus, the improvements would have been unrelated to the VSM intervention. By testing more skills, I could have supported or rejected the benefits of VSM outside of this study's three variables. Another limitation is that the three children might have lacked skills at different levels and thus acquired some skills faster.

Because I observed only three videos, I cannot generalize the findings to a larger group of children or those different in age and gender (see Ohtake et al., 2013). The best way to address this limitation would be to look at other studies, compare how well VSM worked for those participants, and determine if the results were consistent. For example, Ohtake et al. (2013), Lee et al. (2017), Gates et al. (2017), and Buggey and Ogle (2013) all found benefits in using VSM to help children with ASD. Past research made the present findings more beneficial by showing that VSM works in other areas (Lee et al., 2017), thereby increasing the potential to generalize results from future studies with more data.

The three boys in the study were exposed to other children before and after the VSM treatment. Some of the children at the playground might have been there on the same days as the participants, both before and after the VSM presentation. This was a potential concern because a participant's exposure to the same children beforehand could have altered the data. A way to address this concern would be to visit various parks.

Because the study occurred similarly to past research, the methodology and design were appropriate; however, the similarity is still a limitation. There was a potential for bias if the observers had misinterpreted interactions based on personal wishes or expectations. To address this concern, the HTP program leaders sent me all the recordings for analysis. In addition, the children having to interact for at least 15 seconds for the contact to be considered an interaction ensured there were no tallies awarded in error.

Recommendations

Because VSM is a newer area of research, further inquiry is necessary to expand the literature. Children with ASD lack skills and abilities in various areas, leaving room for a large area of research. By exploring more skills in various settings, researchers could further show the effectiveness of using VSM for children with ASD. Applying this treatment approach to teenagers and adults diagnosed with ASD would show VSM's ability to improve skills among other age groups. Such researchers would add value and contribute to helping a larger population of individuals with ASD.

There is room for more research using this study's three dependent variables (i.e., eye contact, cooperative play, and reciprocal action) and adjusting the hypotheses (i.e., using the same percentages for the null and alternative hypotheses). Because the results failed to meet the hypothesized percentages of below 40% or above 80%, a future scholar could determine whether the outcomes were significant by minimizing or removing the percentage gap or changing the parameters for eye contact and cooperative play. For example, a researcher could accept or reject the null hypothesis using a single percentage (e.g., 40%) to identify improvements before and after the VSM application. Researchers

focusing on the three variables (reciprocal action, cooperative play, and eye contact) in environments beyond the playground, such as a school setting or other public forums, could show whether the benefits are environment-specific or if they hold up in other locations. Using different variables is another topic that future researchers can address. Because the data were limited to observations of third-party videos, I could not obtain a comprehensive understanding of the surroundings. Future researchers could collect primary data by directly interacting with and observing the participants.

The variables examined by previous researchers could also use further analysis. Gates et al. (2017) discussed improvement in clinical and school settings. Lee et al. (2014) used VSM and functional play with individuals who have ASD. Lee et al. explored the benefits of teaching toileting skills to a single child. By having more participants, a researcher could provide results more likely generalizable to larger populations.

Implications

The use of VSM in the ASD population has implications for positive social change. As shown in this study, children with ASD could better gain the social skills and tools necessary to interact with others through VSM. As children improve their social skills (specifically, eye contact, cooperative play, and reciprocal action), they gain strength in other areas (see Ostmeyer & Scarpa, 2012). The child also develops as an individual by learning useful skills for life success (Jones et al., 2017). When a child receives a positive response from an interaction, the child's self-worth increases (Thompson, 2013). Therefore, children will be more likely to communicate because they

get positive attention in return (Schaeffer et al., 2016), making them feel good about themselves. Practitioners who see how VSM helps a child with ASD in one area, such as eye contact, could use VSM in other areas, such as behavioral issues. VSM could be a way to help children with ASD learn the skills needed to advance in difficult areas. Positive social change also extends to the community, as children with ASD could engage more appropriately with others outside their environment. The leaders of organizations and institutions working with children with ASD could also benefit from using VSM to improve individual skills. Ultimately, these advances have benefits for society to help individuals who lack skills in different areas.

Conclusion

Although the study's results were not significant enough to accept the alternative hypotheses, they were still important. With my study, I added to existing literature and data from previous research and helped provide direction for future research. There are limitations with any research; however, I took steps to minimize their impact. With these results, I could contribute to positive social change, affecting the individual, family, and members of the community. ASD diagnoses continue to rise; therefore, identifying successful therapy options is essential to help individuals with ASD grow and learn to be self-sustaining members of society.

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Appendix A: Contact Form

Date: _____

Name of child: _____

Dear (Name),

My name is Brittany, and I am a doctoral candidate at Walden University. I will be using the data obtained from the habilitation program in conducting dissertation research on the effects of video self-modeling (VSM), children with autism, and improving social skills. This is a newer area of study; however, the research that has been conducted has been very promising. There is some information that is not yet known, and that is the effect of VSM on improving social skills. Having these findings will provide insight into whether VSM helps children with autism spectrum disorder. All information that is gathered will be kept confidential in a safe, with me having the only key.

Please contact me if you have any questions. My phone number is xxx-xxx-xxxx.

Brittany Londer

Doctoral Candidate

Walden University

Appendix B: Sampling Protocol

Date: _____

Ethnicity: _____

Name of Particpant:_____

Name of Parent(s):_____

1. Please tell me your child's diagnosis.

2. How old is your child?

3. Is your child verbal?

4. Does your child lack social interactions?

5. Who is raising the child?

6. What ethnic background are Dad and Mom?