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The Effects of a Multi-Component Social Skills Self-Monitoring Program on Two Females Diagnosed with Autism Spectrum Disorder

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THE EFFECTS OF A MULTI-COMPONENT SOCIAL SKILLS SELF-MONITORING PROGRAM ON TWO FEMALES DIAGNOSED WITH AUTISM SPECTRUM DISORDER

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McKenzie Bacon

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ABSTRACT

Individuals diagnosed with Autism Spectrum Disorder (ASD) often struggle to engage in the skills necessary to engage in a back-and-forth conversation, or reciprocal social conversations (American Psychiatric Association, 2013; Koegel, Park, & Koegel, 2014; Landa et al., 1992; Paul et al., 2004). An ABAB withdrawal design was employed to assess the use of a social skills program which consisted of 2 main components: (1) ASD on the Go module training with embedded video modeling, and (2) social skills self-monitoring with goal setting. Two participants were selected, both 13-year-old females with high-functioning ASD. During both treatment phases, participants were taught verbal components of a reciprocal conversation (initial response, elaborated response, and reciprocal question-asking) as well as several important non-verbal components (eye contact, facial expression, and posture). Participants engaged in 10-min conversation sessions in which they self-monitored their use of verbal components and set goals related to increased frequency of verbal conversation components. Results showed an increase in verbal components for both participants. Mean frequency of verbal components per 10-min sessions for Participant 1 increased by 10 (initial responses), 9 (elaborated responses), and 21 (reciprocal question-asking) from baseline to intervention. Mean frequency of verbal components for Participant 2 increased by 13 (initial responses), 12 (elaborated responses), and 17 (reciprocal question-asking). These increases indicate an overall increase in the turn-taking and appropriate reciprocal conversation of each participant.

KEYWORDS: autism spectrum disorder, social skills, self-monitoring, video modeling, goal setting, ASD on the Go

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I dedicate this thesis to my Papa Tom.

You taught me the importance of a good story, and this has been one of my best yet.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

Background and Context

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder defined and described by the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* (DSM-V). The symptoms of ASD negatively affect an individual's ability to interact and communicate with others, and cause varying degrees of restricted, repetitive, or stereotyped patterns of behavior. The onset of ASD symptoms begins in the early developmental period, therefore diagnosis is often made in childhood. Data from the most recent survey of the United States of America placed the estimated prevalence rate of ASD at 16.8 per 1,000, or one in every 59 children (Baio, 2018). A diagnosis of ASD was more prevalent among males than among females. For every four males who receive a diagnosis of ASD, only one female will receive a diagnosis. While the male prevalence rate was 26.6 per 1,000, the female prevalence rate was only 6.6 per 1,000. The the prevalence rate of ASD is closely tied to the criteria used to procure a diagnosis, which were last updated with the DSM-V (American Psychiatric Association [APA], 2013).

A medical diagnosis of ASD requires that an individual meet five specific criteria (Criteria A through E) identified by the DSM-V (APA, 2013). Criterion A encompasses difficulties in social communication and social interaction. This includes deficits in social-emotional reciprocity, difficulties with the nonverbal behaviors necessary for communication, and deficits in developing, maintaining, and understanding relationships. Criterion B specifies that the child must engage in a certain level of "restricted and/or repetitive patterns of behavior, interests, or activities" (APA, 2013, p. 50). This might mean the individual adheres to strict routines, has highly restricted interests that are abnormal in intensity or focus, engages in

stereotyped or repetitive motor movements, or is hyper- or hyporeactive to sensory input. Criteria C and D state that symptoms associated with the individual's ASD diagnosis must be present in early childhood and cause clinically significant impairment in the individual's day-to-day functioning. Finally, Criterion E specifies that the disturbances in the individual's functioning do not align better to the criterion for a diagnosis of intellectual disability or global developmental delay (APA, 2013).

As might be expected, an individual who displays the social and communication deficits associated with an ASD diagnosis will experience difficulties engaging in meaningful interactions with others. Social reciprocity is the ability to engage in back-and-forth communicative exchanges with others and is a skill set which has a significant impact on an individual's communication abilities. Reciprocal conversation, characterized by socially appropriate engagement in back-and-forth conversation with others, is a major component of social reciprocity. Individuals diagnosed with ASD often struggle to engage in the skills necessary to engage in a back-and-forth conversation (APA, 2013; Koegel, Park, & Koegel, 2014; Landa et al., 1992; Paul et al., 2004). Social reciprocity skills and reciprocal conversation are essential for friendship building and the development of a support network. Individuals who struggle with social reciprocity and building meaningful relationships are at an increased risk of social withdrawal and isolation (Koegel, Frea, & Surratt, 1994). When considering the importance of learning to engage in social reciprocity and reciprocal conversation, the benefits of aiding teachers, practitioners, and researchers in choosing appropriate interventions becomes apparent.

Educational and medical policy require that teachers, practitioners, and researchers choose Evidence-Based Practices (EBPs) when determining which interventions they should

implement with each individual they work with (Sackett, Rosenberg, Gray, Haynes, & Richardson, 2007; U.S. Department of Education, 2008). An EBP was defined by Odom, Collet-Klingenberg, Rogers, and Hatton (2010) as a practice which (a) has evidence from "at least two experimental or quasi-experimental group design studies carried out by independent researchers, (b) at least five single case design studies from at least three independent investigators, or (c) a combination of at least one experimental and one quasi-experimental study and three single case studies from independent investigators" (pp. 276-277). A comprehensive list of acceptable EBPs has been created from which teachers, practitioners, and researchers can select appropriate interventions to utilize (Odom, Collet-Klingenberg, Rogers, & Hatton, 2010). EBPs selected for this study include social skills self-monitoring and goal setting, as well as a social skills curriculum with embedded video modeling (Koegel, Parks, & Koegel, 2014; Palmer & Wehmeyer, 2003; Charlop-Christy, Le, & Freeman, 2000; ASD on the Go [ASDOTG], n.d.)

Self-monitoring and goal setting are interventions which have met the criteria to be considered an EBP and can be used to teach students with ASD to engage in appropriate reciprocal social conversations with others (Hughes et al., 2012; Koegel, Park, & Koegel, 2014; Hughes, Killian, & Fischer, 1996; Wong et al., 2015). Self-monitoring can be defined as a method in which learners are taught to monitor, record data, report on, and reinforce their own behavior (Wong et al., 2015). In other words, self-monitoring encourages children to self-regulate their own behaviors rather than relying on others for prompts or other external interventions (Koegel, Park, & Koegel, 2014). Goal setting is an EBP which is typically incorporated within self-monitoring. Goal setting means to determine a target level of achievement and utilize it to meet a goal (Sands & Doll, 1998). When a student learns to set

goals, self-monitor their progress, and self-evaluate their results, they are engaging in self-regulated performance (Argan, 1997).

When using self-monitoring and goal setting to increase reciprocal social conversation, researchers are typically studying the effects on elaborations of responses to questions and reciprocal question asking. Simply put, the researchers want to know whether the child can answer a question, elaborate on their answer, and then ask their conversation partner a question in order to continue the flow of conversation. When implemented correctly, self-monitoring and goal setting can enable a child to monitor whether they are completing each step of the social interaction process. When students set a goal, they use self-monitoring to track their progress towards reaching this goal. A teacher or therapist works together with the child to create reasonable goals and then creates and teaches a self-monitoring strategy in order to aid the child in tracking progress. Goal setting has many benefits for its users. It may help children become more organized, lessen anxiety over the learning process, increase confidence, increase understanding of the learning goals, and help generalize knowledge to new environments (Lee, Palmer, & Wehmeyer, 2009). While effective when used alone, self-monitoring procedures have the potential to be combined with other interventions to increase their effects.

Video modeling is an EBP which has been shown to increase learning of new skills in children with ASD (Bellini, & Akullian, 2006; Charlop-Christy, Le, & Freeman, 2000; Wong et al., 2015). Video modeling is an intervention which uses technology such as a computer or iPad to allow a child to observe and imitate a specific skill (Charlop-Christy et al., 2000). This practice has been used in conjunction with a variety of interventions, including those attempting to decrease problem behaviors, teach life skills, and teach social skills. Video modeling is a minimally invasive technique that eliminates the typical problems associated with in-vivo

modeling (modeling in-person) (Charlop-Christy, Le, & Freeman, 2000). Self-monitoring, goal setting, and a social skills curriculum with embedded video modeling were employed in this study.

Problem Statement and Statement of Purpose

Due to the deficits in social communication and interaction which accompany a formal diagnosis, individuals with ASD commonly encounter difficulties with social-emotional reciprocity (APA, 2013; Koegel, Park, & Koegel, 2014; Landa et al., 1992; Paul et al., 2004). This includes the ability to engage in typical back-and-forth conversation, otherwise known as *reciprocal social conversation*. Teachers of students with ASD must decide between various instructional techniques and methods to increase the social interactions of this unique population. This decision becomes more complicated when there is limited research into the student's specific demographic. The prevalence rate of ASD is much lower among females, meaning this demographic is less available for use in research into various interventions (Baio, 2018). Research must be conducted to determine evidence-based social skills curricula and interventions to teach reciprocal social conversation skills, especially to females with ASD (Koegel, Park, & Koegel, 2014). Further research in this area could expand the literature to include research-based practices for females with ASD.

The purpose of this study was three-fold. First, the researcher wished to determine the effects of a self-monitoring program on the verbal reciprocal conversation skills of two females diagnosed with ASD. Second, the researcher hoped to determine the effects of using the computer-based social skills teaching program ASD on the Go in the initial teaching of verbal

and non-verbal conversation skills. Finally, the researcher hoped to determine how socially important this intervention package would be for the participants.

Research Questions and Hypothesis

1. To what extent will a multi-component social skills self-monitoring program result in a higher frequency of verbal components used during conversation in females with high-functioning ASD?
2. To what extent will a multi-component social skills self-monitoring program result in higher quality usage of non-verbal conversational components, as determined by a Likert-type rating scale, in females with high-functioning ASD?
3. To what extent will the effects of a multi-component social skills self-monitoring program for females with high-function autism maintain over time, as measured by two-week maintenance probes?
4. What is the extent to which a multi-component social skills self-monitoring program will result in socially valid improvements, as determined by parents and participants, in the reciprocal social interactions of females with high-functioning ASD?

It was hypothesized that the implementation of a multi-component social skills self-monitoring program intervention would increase the overall reciprocal social conversation verbal and non-verbal components of adolescent females diagnosed with high-functioning ASD. It was also hypothesized that these results would maintain over time and that parents and consumers would find the intervention to be socially valid.

Research Design and Dependent Variables

This study was constructed and implemented according to a single-subject ABAB withdrawal design. The dependent variables of the study were verbal components of reciprocal conversations (initial reciprocal responses, elaborated reciprocal responses, and reciprocal question-asking) as well as non-verbal components of reciprocal conversations (eye contact, appropriate facial responding, and physical posturing during conversation). Frequency data were collected on verbal components, and a Likert scale rating was completed on non-verbal

components. Following the scoring of several intervention conversation sessions, it was determined that conversation interruptions should also be scored, as the participants often interrupted conversation partners during sessions, thus preventing the conversation partner from completing their turn. Guidelines for single-subject research designs were utilized, which ensured internal validity and allows causal inferences to be made. According to Kazdin (2011), a single-subject research design must employ continuous assessment, baseline assessment showing data with very little variability, and proof of a stable trend within baseline and all phases of the experiment. To address the continuous assessment aspect of single-subject research designs, data was collected each time clients were seen, or once to twice a week. To ensure a stable trend, a minimum of five data points was collected during each phase of the intervention, with phases changing only when a trend had been clearly established (Kazdin, 2011).

This study consisted of quantitative questioning and data collection. Quantitative data was collected by using several different techniques. During a sequence of baseline observation sessions, participants were observed and filmed while engaging in the same conversation activities that were used during intervention. The researcher, as well as trained research assistants, took data on the before-mentioned verbal and non-verbal components of reciprocal conversations. Observation sessions took place at the same time each day and data sessions were 10 min in duration. Throughout intervention, data was collected on the dependent variables in order to determine whether the intervention had a positive effect. Social validity data was collected to determine the social significance of the implementation of the independent variables. Parents and participants completed pre- and post- intervention social validity questionnaires in order to determine their perception of the social significance of the intervention.

Rationale and Significance

Students with ASD display large deficits in the ability to appropriately interact with others. These students often report the desire and concurrent inability to interact with others and form relationships. This was demonstrated in a study conducted by Bauminger and Kasari (2000) which noted that students with ASD expressed the need for social interactions with their peers but also reported fewer social supports and more loneliness than typically developing students of the same age. Per the criteria for a diagnosis of ASD, individuals on the autism spectrum struggle with reciprocal, back-and-forth conversation (APA, 2013; Koegel, Park, & Koegel, 2014; Landa et al., 1992; Paul et al., 2004). This skill is necessary for building and maintaining healthy relationships. For these reasons it is very important for teachers to be able to determine the most beneficial method of teaching their students how to interact with others.

Current bodies of research contain more male than female participants, leading to difficulty locating interventions used extensively with female subjects that have been published in peer-reviewed journals (Kirkovski, Enticott, & Fitzgerald, 2013). Special education teachers and practitioners are highly influential and important to the development of students with ASD, and it is crucial that they have access to a large body of research conducted with each demographic of student they work with. It would be most beneficial to students to be given interventions that have been studied at depth and fine-tuned to fit their individual needs.

Definitions and Key Terminology

1. Elaboration of Response: Providing an on-topic response to the conversational partner's initial question and expanding on the response by adding relevant, on-topic information (Koegel, Park, & Koegel, 2014).
2. Eye Contact: The participant's face and body are oriented towards the conversation partner. The participant's eyes are oriented towards the conversation partner for 3-5 s at a time, and the participant's eyes never look away from the face of the partner for more than 10

continuous seconds at any time during the interaction (Dotson, Leaf, Sheldon, & Sherman, 2010).

3. Facial Expression: The participant nonverbally acknowledges the emotion of the conversation partner based on his/her facial expression (ex; the participant smiles in return when the conversation partner smiles) (Laushey, Heflin, Shippen, Alberto, & Fredrick, 2009).
4. Goal Setting: Creating a target or plan for what one wants to accomplish or achieve (Sands & Doll, 1998).
5. Initial Reciprocal Response: Answering the question or making an on-topic comment (Koegel, Park, & Koegel, 2014).
6. Posture: The participant maintains an erect and relaxed posture during the entire interaction. The participant does not engage in any distracting behaviors such as rocking, tapping feet, repetitive hand flapping, excessive fidgeting, repetitive manipulation of objects (e.g., twisting or spinning a pencil or paper clip), etc. (Dotson, Leaf, Sheldon, & Sherman, 2010).
7. Reciprocal Question-Asking: Asking a question to the conversational partner that was related to their preceding response or to the conversational partner's initial question (Koegel, Park, & Koegel, 2014).
8. Self-Monitoring: A method in which learners are taught to monitor, record data, report on, and reinforce their own behavior (Wong et al., 2015).
9. Video Modeling: Utilizes assistive technology as the core component of instruction and allows for pre-rehearsal of the target behavior or skill via observation (Wong et al., 2015).

REVIEW OF LITERATURE

Overview of Autism Spectrum Disorder

Autism as a diagnosis was first conceptualized by psychiatrist Kanner (1943) when he studied a group of 11 children who had come into his office and displayed a unique set of characteristics which appeared to set them apart from typically developing children of the same age. These characteristics included lack of interest in other people, insistence on sameness, unusual use of language, and many other features we now associate with "autism". No studies had been conducted of children displaying these individualities, prompting Kanner to conduct a long-term study of a group of children over several years. He postulated this was a unique disorder that had not yet been defined. His participants included eight boys and three girls, who were observed over a period of years in order to track whether the they maintained their "autistic" behaviors. By comparing the characteristics of these children over several years with the characteristics of a typically developing child as they age, Kanner determined that these characteristics were similar across participants and abnormal when compared to typically developing children. In his discussion, Kanner confirms his hypothesis of a new, separate diagnosis, and termed this disorder "autistic disturbances of affective contact". Over the years, this diagnosis has evolved into the one which we are familiar with in the present.

Although Dr. Kanner conceptualized the diagnostic criteria in 1943, it was not until 1980 that Autism Spectrum Disorder was given a place in the Diagnostic and Statistical Manual of Mental Disorders (DSM), officially making it a diagnosable disorder. At the time it was classified as "Infantile Autism" but by 1987 this had been replaced with "Autism Disorder". By 1991 autism was designated as a special education category, which brought with it the legal

protections of IDEA (Individuals with Disabilities Education Act, 2004). In 2013, the fifth edition of the DSM (DSM-V) adopted a term which was already widely used at the time, Autism Spectrum Disorder (ASD). The main characteristics associated with a diagnosis of ASD are deficits in social communication and interaction including "deficits in social-emotional reciprocity, nonverbal communicative behaviors used for social interaction, and deficits in developing, maintaining, and understanding relationships" (APA, 2013, p. 50). These, coupled with some forms of restricted, repetitive patterns of behavior, interests, or activities, make up the defining characteristics of ASD.

To receive a diagnosis of ASD, a wide variety of deficits in social communication and interaction must be present in the child. The first of these is social-emotional reciprocity, which encompasses back-and-forth interactions with others. A child with a deficit in social-emotional reciprocity may exhibit an abnormal social approach, fail to engage in appropriate conversation including initiating and responding to others, and display little to no inclination to talk about the interests of others. The next deficit seen in social communication and interaction is in the area of nonverbal communicative behaviors. Individuals with ASD may have difficulty with eye contact, body language and gestures, facial expressions, and utilizing verbal and nonverbal communicative behaviors cohesively. Not only will these children have difficulty utilizing nonverbal communication, but they will also struggle to understand the nonverbal communication of others.

The final deficit seen in social communication and interaction is developing, maintaining, and understanding relationships. An individual with ASD may find it difficult to adjust their behavior to suit different social contexts, struggle to engage in imaginative play with others and make friends, and may even show little to no interest in their peers (APA, 2013). Social

communication and interaction deficits are the defining feature, and most extensive category within a diagnosis of ASD, and therefore necessitate intensive social skills instruction to improve the lives of those living with the disorder.

History of Social Skills Instruction

Modern methods of social skills instruction began to take shape in the 1970s, with studies such as one conducted by McFall and Lillesaud (1971), which attempted to teach assertiveness skills to typically developing adults. Early social skills instruction studies employed many techniques we still utilize today, including direct instruction, modeling, behavioral rehearsal, feedback, and reinforcement (Bradlyn, Himandi, Crimmins, Graves, & Kelly, 1983). The social skills targeted in the first interventions laid the foundation for skills taught today, and included conversational skills, interpersonal skills, time management, social problem-solving, responding to questions, leisure skills (now considered "play skills"), identification of nonverbal cues, making requests, listening skills, talking about one's interests, and initiating conversation (Bradlyn, Himandi, Crimmins, Graves, & Kelly, 1983; Hayes, Halford, & Varghese, 1995; Liberman, 1992; Azrin & Hayes, 1984; Christoff et al., 1985). These early interventions did not focus solely on individuals with ASD. Examples of early populations studied include those with "intense shyness", intellectual disability, depression, social phobia, visual handicaps, conduct disorder, social anxiety, and attention deficit hyperactivity disorder (ADHD) (Matson & Burns, 2017). In recent years, the population most studied in regard to social skills instruction techniques has been that of individuals with ASD (Matson & Burns, 2017).

When studying social skills instruction and attempting to define the term "social skills", it is important to distinguish between social skills and social competence (Little, Swangler, &

Akin-Little, 2017). Social competence is the ability to perform socially in a way that others deem acceptable and successful (Hops, 1983). While the ultimate outcome is that individuals are socially competent, it is necessary first to teach and shape the skills necessary for social competence. Social skills are specific to a situation, and maximize the probability reinforcement while minimizing the probability of punishment (Foster & Ritchey, 1979; Libet & Lewinsohn, 1973). When implementing an intervention, the previous definition allows for social skills to be defined operationally and measured throughout the experiment. Another important measurement for a social skills intervention is social validity. Teaching skills that are socially valid, or predict important social outcomes in specific situations, is crucial in predicting the ultimate social competence of an individual (Gresham, 1983; Kazdin, 1977; Wolf, 1978). When selecting operational definitions and social validity measures, it is best practice to select those that closely match the initial social skills assessments given to the individual (Little, Swangler, & Akin-Little, 2017). Determining which social skills to teach and how to teach them is extremely important to those who work with individuals diagnosed with ASD.

Social Skills and Applied Behavior Analysis

Applied Behavior Analysis (ABA) is an area of study which seeks to use the laws of behavior to improve issues of social significance. Applied Behavior Analysis by itself is not an intervention, nor is it a single EBP. Instead, ABA is a theoretical framework consisting of techniques which can shape an intervention as whole. When used to guide instruction, behavior-analytic principles are recognized as some of the most effective practices for children diagnosed with ASD (Makrygianni, Gena, Katoudi, & Galanis, 2018). Some commonly used ABA techniques include positive reinforcement, prompting and prompt fading, techniques that

promote generalization, and data-based decision making. From a behavior-analytic point of view, social skills are defined as discrete behaviors or as a series of more complex behaviors that have an impact on the responding of others (McFall, 1982) and that occur within a "social contingency." A typical social contingency includes three parts: a discriminative stimulus (SD), a response, and a social consequence (Cooper, Heron, & Heward, 2020). An SD signals that when a certain behavior is performed, a particular reinforcer is more likely to be delivered (Cooper et al., 2020). When looking at this concept within a conversation, typically the conversation partner would be the SD. A child who is reinforced by talking about trains may learn that talking about trains will be reinforced by a listening response when the conversation partner is their mother, but will not be reinforced when the conversation partner is a certain peer.

The response in a social contingency can be very simple (a "yes" or "no") or it can be expanded to include any type of social behavior emitted by the child. These behaviors include eye contact, proximity, facial expressions, gestures, and the complex verbal exchanges seen in reciprocal conversations (Lanovaz, Dufour, & Argumedes, 2017). The components of a response in reciprocal conversations are an example of a term in ABA called a "behavior chain". Behavioral chaining is an EBP for teaching social skills to children and youth with ASD (Odom, Collet-Klingenberg, Rogers, & Hatton, 2010). A behavior chain is a series of responses in which each response is an SD, or signal, for the next response to occur, and is also a reinforcer for the response that produced it (Cooper, Heron, & Heward, 2020). All responses in a behavior chain must occur in the specified order for the ultimate reinforcer to be provided. When a child is asked a question during conversation, their verbal behavior chain might look like the following: (answer the question)→(add more relevant information)→(ask a question of conversation partner). If the therapist is teaching this behavior chain, and any response does not occur, or

occurs out of sequence, the child will not receive reinforcement for that chain (reinforcement being the continuation of the conversation by the therapist).

When planning a social skills intervention, manipulation of establishing operations (EOs) should occur before the social contingency takes place. An EO is a stimulus that increases the value of a consequence (Cooper et al., 2020). Looking at the conversation example used above, the therapist might deprive the child of social reinforcement (conversation) for a period of time before the session in order to increase the value of engaging in the behavior chain. The therapist may also ensure they are a highly reinforcing conversationalist, in order to increase the value of social reinforcement. Arranging an EO is important because a child is less likely to perform a desired social behavior if the consequence provided contingent on the behavior is not valuable. It is important to be conscious of the fact that children with ASD may not always be reinforced by social consequences (Lanovaz et al., 2017). If the results of preference assessments indicate that social consequences are not reinforcing for a child, then additional reinforcers can be paired with the social consequences. Pairing highly preferred reinforcers (e.g., tangibles such as toys, food, electronics, etc.) with social consequences (e.g., social interaction) may successfully condition social responses from others as reinforcers and strengthen the social response being taught (Lanovas et al., 2017).

Preference assessments are a fundamental component of any social skills intervention. These assessments are designed to help teachers and practitioners identify preferred stimuli to use when teaching new skills (Graff & Kartsten, 2012). While there are a variety of preference assessments available, surveys are among the most simple and easiest procedures to identify preferences and reinforcers (Resetar & Noell, 2008; Rotatori, Fox, & Switzky, 1979). Once reinforcers have been determined, the next step in planning an intervention is determining the

most appropriate reinforcement schedule. Reinforcement schedules may be either ratio based or interval based. In a ratio-based schedule, reinforcement is delivered after a specific number of responses. In an interval-based schedule, reinforcement is delivered for the first response after a fixed or variable amount of time has elapsed (Catania, 2013). Complex social behaviors such as reciprocal conversations are typically taught using an interval-based schedule of delivery, as they encourage long-term attending to the skill rather than shorter bouts of behavior (Lanovaz, Dufour, & Argumedes, 2017).

Social Skills, Gender, and Autism Spectrum Disorder

Given that impaired development in social communication and reciprocity is a hallmark diagnostic characteristic, individuals with ASD will likely display a variety of social skill deficits. Early indicators of social skill impairments in children with ASD include lack of response when name is called, poor eye contact, failure to imitate others or show interesting things to caregivers, and lack of interest in other children (APA, 2013). Poor posture and motor coordination are also commonly found within the ASD population (Kanai, Toth, Kuroda, Miyake, & Itahashi, 2017) While a diagnosis is typically made after three years of age, the previously mentioned symptoms can appear as early as six months of age (Bolton, Golding, Emond, & Steer, 2012). When a child displays high levels of language skills, this may complicate and delay diagnosis of ASD. Recent studies indicate that individuals on the higher range of the IQ distribution, especially females, are far less likely to receive an early diagnosis (Frazier, Georgiades, Bishop, & Hardan, 2014; Volkmar, Szatmari, & Sparrow, 1993; Lai et al., 2011). It has been found that the level of impairment and distress related to social impairment may increase as children reach adolescence due to the necessity for more complex social

interactions and increasing awareness within the child that they are "different" (Schopler & Mesibov, 1983; Tantam, 2003). The implications of late diagnosis and intervention for these individuals are far reaching in the trajectories of a child's life.

Cridland, Jones, Caputi, and Magee (2014) sought to record the experiences of adolescent females with ASD through semi-structured interviews. Several areas of particular interest to the authors were challenges related to late diagnosis, issues coping with high school, difficulties interacting with same-age typically developing girls, and understanding personal boundaries when interacting with others. All participants indicated a plethora of social challenges related to the characteristics of ASD. These included difficulties in the development and maintenance of friendships with female peers, over-reliance on imitation of social skills rather than an ability to fluently utilize them in specific situations, and difficulty following conversations. The social difficulties discovered by the aforementioned study are particularly concerning when compared to literature examining the importance of friendships to females with ASD.

A recent study by Foggo and Webster (2017) utilized written accounts and interviews to explore the social awareness experiences of adolescent females with ASD. Findings indicate support for the idea that many females with ASD desire friendships with female peers and possess a realistic understanding of the qualities and characteristics of quality female friendships. The individuals who participated in this study indicated that reciprocity (back and forth communication) and support from their female friends was extremely important. When considering the known negative impact ASD has on social skills, the self-awareness many females possess in regards to their own social deficits, and the likelihood that these individuals understand and desire friendships, it becomes evident the implications of ASD on females are exceedingly complex.

Several studies have found that when compared to males with ASD, females with ASD exhibit more functional social behavior and less of the classic repetitive behaviors associated with an ASD diagnosis (Head, McGillivray, & Stokes, 2014; Lai et al., 2011; Zwaigenbaum et al., 2012; Mandy et al., 2012). Clinicians are more likely to perceive a female with an IQ above 70 as being more "social" than a typical individual with ASD, which may contribute to delayed or misinterpreted diagnosis (Halladay et al., 2015). Despite the appearance of a more acceptable social skill repertoire in females with ASD and no intellectual deficit, insufficiencies in social communication, understanding of nonverbal communication, and deficits in Theory of Mind persist and affect the individual's life (Senju, Southage, White, & Frith, 2009). A deficit in Theory of Mind (ToM) is a common explanation for the apparent "mindblindness" of individuals with ASD. ToM deficits describe the common inability of individuals with ASD to attribute mental states to themselves and others. ToM deficits are associated with multiple forms of social impairment, including lack of pretend play, use of gestures, and understanding of deception and irony (Senju et al., 2009).

Another common explanation for the social skills deficits seen in individuals with ASD is poor executive function. Executive function is a process of the brain which involves self-regulation and the ability to engage in goal-setting and goal-achievement (Panerai, Tasca, Ferri, Genitori D' Arrigo, & Elia, 2014). Executive functioning skills include "attention, organization, time management, memory, flexibility, inhibition (interrupting one's actions and monitoring the dominant response), personal goals, and control of emotion and behavior" (Kanai, Toth, Kuroda, Miyake, & Itahashi, 2017, p. 228). It is believed that poor executive functioning is the result of differences in the brains of individuals with ASD, and is thought to occur mainly in the prefrontal cortex (Hill, 2004). When programming social skills instruction for individuals with

ASD, deficits in executive functioning must be addressed through the interventions selected. This makes interventions that utilize self-management and goal setting valuable assets to any behavior change program for individuals with ASD.

Self-Monitoring with Goal Setting

Self-management is an EBP in which an individual applies behavioral tactics to themselves in order to produce a desired behavior change (Cooper, Heron, & Heward, 2020). Wong et al. (2015) determined that according to evidence-based studies, self-management can be used to teach social, academic, behavior, communication, play, and vocational skills to individuals with ASD from three to 22 years old. A meta-analysis conducted by Carr, Moore, and Anderson (2014) determined that self-management is effective in increasing social skills for students with ASD, and the effects maintain over time and generalize across settings and behaviors. Self-monitoring is a component of a self-management program, and consists of teaching learners to measure and record their own behavior, and then evaluate whether they have met a predetermined level of behavior (Loftin, Gibb, & Skiba, 2005). Goal setting is utilized within a self-monitoring framework in order to increase desired behaviors or decrease undesirable behaviors. Self-monitoring is often combined with other strategies such as video modeling, reinforcement, visual supports, and self-evaluation (Cooper et al., 2020; Wong et al., 2015).

Whether using self-monitoring alone or in combination with other interventions, success depends on adherence to several guidelines. The target behavior should be operationally defined so that it is measurable by any observer. Whenever possible, the child should be consulted with to determine acceptable behaviors and goals to be achieved. The next guideline to be followed is

to choose a self-monitoring data sheet that is accessible and acceptable to the child and those working with them. The three most common types of data collection for self-monitoring are a rating scale, checklist, or frequency count (Chafouleas, Riley-Tillman, & Sugai, 2007). The third guideline to follow when implementing self-monitoring is to choose a monitoring schedule that is functional for the child and interventionists, and also suitable for accurate measurement of the target behavior (Rafferty, 2010; Webber et al., 1993). Self-monitoring may occur at scheduled transition points throughout the day, at fixed intervals throughout activities or assignments, or at the start or end of the day.

Next, a monitoring device must be chosen to cue the student to self-monitor (Rafferty, 2010). Often times this will involve some type of timer on a technological device. The next guidelines to follow are to choose a reinforcement system if required, and to conduct checks on the accuracy of the student's self-monitoring. Reinforcement may be necessary to encourage use of the self-monitoring system, and accuracy checks will ensure the student is self-monitoring correctly. The final guideline is to develop a plan for fading the self-monitoring system, if desired. Fading would involve gradually simplifying or discontinuing the self-monitoring system (Loftin, Gibb, & Skiba, 2005; Rafferty, 2010). This technique can be used with any taught skill, including social skills. Some benefits of utilizing self-monitoring include easily transportable materials, and a higher likelihood of generalization of learned skills to new environments (Koegel, Park, & Koegel, 2014). While there are many types of self-monitoring programs in existence, those that follow the previously mentioned guidelines will be the most effective. Learning to self-monitor social skills through an appropriately designed program can help children gain independence and decrease the need for prompting from others or the need for further interventions (Wright, 2013).

Many studies utilizing self-management and self-monitoring have been conducted in regards to increasing social skills. Koegel, Park, and Koegel (2014) conducted a study on the utilization of self-monitoring to increase the conversation skills of one adolescent and two children diagnosed with ASD. Research has shown that social skills interventions targeting individual conversational skills are effective, creating an area of future research addressed by this study: determining the effects of a social skills intervention on the overall reciprocal conversation abilities of individuals with ASD. Self-management and self-monitoring were used in an attempt to increase a series of speech acts in order to form a socially appropriate conversation. Three participants who had received a diagnosis of ASD were selected for this study. All three were males and their ages were as follows: nine years, 14 years, and four years old. All three children demonstrated an inability to engage in a reciprocal conversation. Sessions were conducted in each child's house, in one room, and generalization was conducted in a different room. A multiple baseline design across participants was used in this study. It was found while all three children engaged in low levels of reciprocal conversation and elaborated responses during baseline, all three increased significantly during and after the study. Social validity measures given to naïve observers demonstrated substantial gains in the perceived conversational competence of the participants. It was determined that a self-monitoring intervention increased reciprocal conversation, specifically the frequency of elaborated responses and reciprocal question-asking during conversation, for all participants (Koegel et al., 2014).

Other studies have targeted individual social skills which increase social competency and communication skills. Morrison, Kamps, Garcia, and Parker (2001) examined the effects of a self-monitoring intervention on initiations and social interaction skills of four students with ASD from ten to 13 years old. Students were taught to self-monitor requesting, commenting, and

sharing using a pencil and paper self-monitoring system while playing games with same-age typically developing peers. Results of the study indicated that self-monitoring, reinforcement, direct instruction, and peer mediation increased initiations and total social interaction time for all participants. A unique component of this intervention was the comparison of peer monitoring of the individual with ASD and self-monitoring conducted by the individual with ASD. The difference between these two conditions, which were alternated throughout the study, was found to be statistically insignificant. The authors suggest that self-monitoring is more likely to increase independence and self-determination, and therefore may be a better choice than peer monitoring.

Another study which aimed to increase social interaction engagement through self-monitoring was conducted by Reynolds, Gast, and Luscre (2013). Of the four participants in this study, two had a diagnosis of ASD or high-functioning ASD, and one had characteristics of ASD but no diagnosis. These participants, ranging in age from five years six months to six years six months, were selected for the intervention due to teacher-reported ability to the verbal ability to communicate in sentences and low levels of social interaction with peers. The participants were explicitly taught how to make social initiations through direct instruction, audio, recordings, and modeling. The self-monitoring device they were taught to use was a wrist counter, which they were instructed to press every time they emitted an initiation. This intervention also measured engagement in social interactions. While not explicitly taught, researchers took data on the percentage of each session in which a student was engaged in social interactions as observed by verbal, on topic behaviors emitted within 5s of another child's initiation or response. During sessions, each participant was paired with a typically developing peer and instructed to talk with their friend while eating their lunches together. The results of the study indicated a significant

increase in the frequency of social initiations, as well as an increase in the mean percentage of intervals in which participants were engaged in social interaction. Researchers also noted that participants emitted social behaviors during intervention which had not been modeled to them during the teaching phase. Students were also observed engaging in social skills which had been taught to them during the intervention within other settings. These findings indicate that social skills learned through self-monitoring may generalize across settings and skills (Reynolds et al., 2013).

Generalization and maintenance of intervention effects are important to study when determining the overall utility of an intervention. Another self-monitoring intervention, employed by Loftin, Odom, and Lantz (2007), explored maintenance of social skills taught through self-monitoring. The intervention was conducted in an effort to decrease repetitive motor behaviors and increase social initiations and social interaction. Three students diagnosed with ASD from nine to ten years old participated in the study. Participants were taught to give themselves points for social initiations on a wrist counter, and reinforced after earning a predetermined number of points. Adult presence was faded and the number of points required to receive reinforcement was gradually increased. Results of the intervention indicate an increase in social initiations for all participants, and social interactions were maintained throughout sessions. In addition to these findings, the participants' repetitive behaviors were reduced, and maintained at low levels during maintenance probes conducted over a month after the intervention. These probes also showed a maintenance in the increased levels of initiations and social interaction (Loftin et al., 2007). In order to ensure a successful self-monitoring intervention, it is important that goal setting is used to help students increase or decrease target behaviors over time (Lee, Palmer, and Wehmeyer, 2009).

Goal setting is a crucial component of a self-monitoring intervention. In goal-setting a learner creates a target or plan for what they want to accomplish or achieve (Sands & Doll, 1998). Goal setting and goal attainment have been identified as important skill sets in the overall development of self-determination in students with developmental disabilities. Self-determination describes an individual's attitude and belief that they can assume responsibility of their future and set goals in order to achieve the future they desire (Algozzine et al. 2001; Fowler et al. 2007; Konrad et al. 2007; Palmer and Wehmeyer, 2003). According to IDEA 2004, all public schools are required to ensure students with disabilities are involved in their educational planning, and have access to the general education curriculum. Self-determination and utilizing self-directed learning strategies such as goal setting and self-monitoring are strategies which promote development of self-determination, and in turn aid students in taking ownership of their educational planning and accessing the general education curriculum (Lee, Palmer, & Wehmeyer, 2009). Considering the importance of learning goal setting in order to promote self-determination, it is crucial that teachers and interventionists are consistent when teaching goal setting.

A framework for teaching and supporting students in goal setting and goal attainment exists and provides a set of guidelines to follow. Lee, Palmer, & Wehmeyer (2009) created guidelines based on empirical research to aid teachers and therapists in implementing goal setting procedures for students with disabilities. By utilizing a review of studies which implemented goal setting interventions, the researchers developed a framework which provides the steps toward setting meaningful goals. First, the child must be assisted in developing an action plan for their goal. This will help them plan out the steps required to meet their goal. Next, the child must be assisted in created a self-monitoring sheet to help them keep track of their

progress toward their goal. After working towards this goal, the child will need to learn to evaluate their progress, and readjust if necessary. By utilizing a goal-setting framework, children can increase their organization, confidence, participation, and understanding of concepts being learned (Lee et al., 2009). Goal setting is often included within an intervention package, which makes it difficult to determine its effects on a target behavior in isolation.

Self-monitoring, specifically, is an EBP that incorporates goal-setting as part of its framework. Carr, Moore, and Anderson (2014) conducted a systematic search of peer-reviewed literature to explore the implications of using goal setting for individuals with ASD. Of the 38 studies reviewed, five participants had a primary diagnosis of ASD and one study focused primarily on teaching social skills. The results of the study indicate support for utilizing intervention packages containing goal setting and other EBPs such as self-monitoring and video modeling, and preliminary support for utilizing goal setting alone for individuals with ASD (Carr et al., 2014). Many interventions used to teach social skills to individuals with ASD contain a goal setting component. One such intervention, conducted by Cotugno (2009) used both individual and group goal setting to increase the social competence and social skills of children with ASD. The purpose of the study was to explore the effects of a 30-week social competence and skills program which utilized group and cognitive behavioral therapy, direct skill instruction, and goal setting.

This intervention utilized detailed social skills assessment and interviews to determine the social skills deficits to be targeted throughout the intervention. A total of 18 children between the ages of seven and 11 were divided into two similar-age groups for intervention. To supplement the implementation of a peer-based group social skills intervention, group leaders and participants worked together to set goals relating to key social skills deficits identified by

preliminary assessments (joint attention, eye gaze, question-asking, social anxiety and stress management, and flexibility with transitions). The two groups within this intervention chose to focus their goals on stress management, interpersonal skills, and joint attention. A comparison of pre- and post-intervention assessments indicated significant improvement in the previously mentioned skills targeted through the goals of the participants (Cotugno, 2009). The results of this intervention and other studies included in this section indicate that the use of goal-setting, combined with other EBPs, is a viable option for teachers and interventionists wishing to increase the social skills and social competency of their students with ASD.

ASD on the Go with Embedded Video Modeling

ASD on the Go (ASDOTG; n.d.) is a computer-based curriculum which uses video-based modules to provide instruction and intervention to adolescents and adults diagnosed with ASD. ASD on the Go was designed to address deficits in socials skills, problem solving, or organizational skills. It is intended to be implemented by special education teachers, school counselors, behavioral therapists, parent/guardians, or the individual with ASD. It can be used in school settings, work environments, in the community, or at home. ASD on the Go uses online instructional modules to deliver direct instruction, video modeling, and self-monitoring to ensure instructional targets are being met. The site includes computer module lessons, companion worksheets, comprehension questions embedded throughout the module, and a quiz following each module to measure comprehension and mastery of the material. The focus on video-based modules is based in evidence that individuals with ASD may benefit from interventions which utilize visual supports.

Visual supports are an EBP which can be used to teach social skills in individuals with ASD from zero to 22 years old (Wong et al., 2015). The concept of utilizing technology to deliver visually-based instruction to individuals with ASD has been thoroughly researched and shown to be effective (Cihak, Fahrenkrog, Ayres, & Smith, 2010; Golan & Baron-Cohen, 2006; Hopkins et al., 2011; Mason, Davis, Boles, & Goodwyn, 2013; Mineo, Ziegler, Gill, & Salkin, 2009; Richter & Test, 2011; Silver & Oakes, 2001). Video modeling is an instructional technique in which a model is recorded performing a desired behavior, with the resulting video being used to teach the desired behavior to a learner. When teaching social skills, video modeling is a form of behavior chaining (see Social Skills and Applied Behavior Analysis section) in which all components of a social behavior such as conversation are taught at once (Lanovaz, Dufour, & Argumedes, 2017). The core components of video modeling are the use of assistive technology, reduced in-person instruction time, and ability of the learner to engage in pre-rehearsal of target behaviors (Wong et al., 2015). Video modeling is divided into five types; adult models, peer models, video self-modeling (VSM), point-of-view modeling, and mixed models. The model used in video modeling may be an adult model, a peer, or the individual learning the skill (self-modeling). In point-of-view modeling, the video is filmed from the point of view of the person performing the behavior. A mixed model involves combining any of the other four types of video modeling (McCoy & Hermansen, 2007).

Regardless of the type, video modeling is considered an EBP for teaching social-communication skills, behavioral skills, and functional skills (Bellini & Akullian, 2007; Reichow & Volkmar, 2010). A recent synthesis conducted by Reichow and Volkmar (2010) determined that video modeling is a promising EBP in regards to teaching social skills to school-aged children with ASD. It is hypothesized within this synthesis that video modeling may be more

effective for learners with ASD due to their propensity toward visual styles of learning. This study applied stringent criteria for EBPs to sixty-six studies, including fifteen which utilized video modeling as a major component of the social skills intervention for children diagnosed with ASD ranging from preschool-aged to adults. Due to the variations in video modeling options, the first dilemma a researcher or interventionist faces when using video modeling as an instructional tool is choosing which type of video modeling to use.

When teaching social skills, researches have attempted to determine whether modeling by others or VSM is more effective. Sherer, Pierce, Paredes, Kisacky, Ingersoll, and Schreibman (2001) sought to determine whether VSM or modeling by others was more effective at teaching conversation skills to children with ASD. An alternating treatment design was used to compare the effects of the two types of video modeling on five male participants with a mean age of seven years old. Participants were taught to answer questions in a conversational context. One of each type of video model was created for each participant: video self-models were produced by video-taping the participant answering questions, while video models of others were created by video-taping same-age peers answering questions. Different questions were asked to ensure no cross-over effect between conditions. The results of the study indicate that there was no significant difference in effectiveness or preference for one type of video modeling over the other. This supports the use of either type of video-modeling in an intervention setting. One discouraging finding, however, was that for two of the five participants, mastery criteria were never met with the use of either type of video-modeling. These results raise concerns over the use of video-modeling alone in the teaching of social skills.

Video modeling can be used alone or in combination with other interventions to teach social skills. A study by Apple, Billingsley, and Schwartz (2005) compared the effects of using

video modeling alone to using video modeling along with self-management. The social skill targeted for this intervention was compliment-giving. In the video modeling alone group, two five-year old boys with high-functioning ASD were given video modeling, explicit rules, and reinforcement. The video modeling combined with self-management group were given the intervention after completion of the video-modeling only group. This second group contained a participant from the previous video modeling only group as well as two new participants (a four-year-old female and five-year-old male, both with high functioning ASD). The self-management component was comprised of a wrist counter or checklist that prompted the child to check off when they had emitted a compliment, and monitor how many compliments they had to give to earn a tangible reinforcer. While the video modeling alone intervention successfully taught compliment giving, it was found that the combination of video modeling and self-management was associated with a higher frequency of initiating compliment giving initiations. The addition of the self-management component also correlated increased independence and decreased adult supervision and prompting in regard to the participants' performance of the target behavior.

Video modeling has been causally linked to quick acquisition of social skills, as well as generalization across settings and people, and maintenance over time (Bellini & Akullian, 2007). While it is important to directly teach social skills through an instructional tool such as video modeling (Walker et al., 1994), it is also imperative to target specific social skills deficits individually in order to increase overall social competence (Hume, Bellini, & Pratt, 2005). A study by Boudreau and Harvey (2013) examined the acquisition and maintenance of one specific social skill, initiating social interactions, when taught via video modeling. Three participants diagnosed with ASD ranging in age from four to seven were provided with video self-models of themselves initiating interaction with a same-age peer. All three participants exhibited a dramatic

increase in initiations to peers either immediately (two participants) or within a week (one participant). These increases maintained for all three participants during a two-week probe, indicating that video modeling is linked to maintenance of the social skills being modeled.

While Boudreau and Harvey (2013) focused solely on social initiations, social interactions are composed of several other social skills. When looking at a reciprocal conversation, social responses are the natural consequence, and appropriate sequence, after an initiation has been made. The teaching of social response has been experimentally examined in peer-reviewed literature. Maione and Mirenda (2006) used video modeling to teach initiating and responding when playing with same-age peers to a five-year-old child with ASD. The two social skills were taught across three different play activities specific to the child's interests. The results of the intervention show an increase in initiations and responses, as well as a high level of response generalization as evidenced by the participant eventually using more unscripted language than scripted language. These findings, as well as those outlined by the other articles in this section, identify video modeling as an EBP for teaching social skills in relation to acquisition, generalization, and maintenance.

ASD on the Go (ASDOTG, n.d.) utilizes video modeling along with other interventions to deliver social skills instruction. All instructional components of ASD on the Go are EBPs, and research utilizing ASD on the Go as an instructional tool is currently underway. Mason, Gregori, Wills, Kamps, and Huffman (2019) conducted a study aimed at determining the effects of audio coaching on the question asking of female college students with ASD. The participants of this study were four women with ASD between the ages of 18 and 23, as well as nine communicative partners ranging in age from 18 to 33. While the main focus of this intervention was covert audio coaching (CAC), ASD on the Go was used as the direct instruction tool for the target behavior

(question asking). The researchers arranged for each participant to watch the *Maintaining a Conversation* module before their first session with CAC. In order to measure the social validity of ASD on the Go, the participants were given a fourteen-question survey containing 5-point Likert scale type questions to rate their experience with the module. Three of the four participants took this survey, with one opting not to participate.

When asked whether the modules were fun to watch, 67% of participants agreed with this statement. When asked whether the modules helped the participants learn how to ask and answer questions, 100% indicated they strongly agreed. One participant indicated a strong desire to re-watch the module, and all participants gave neutral responses when asked if they would like to watch modules about other social skills. When looking at the intervention as a whole, a possible functional relation is observed between the implementation of the ASD on the Go module along with CAC and an increase in the frequency of question asking for three of the four participants. Another similar study utilizing ASD on the Go was conducted by Mason and Gregori (2019) which explored the effects of telecoaching of conversation skills as well as ASD on the Go modules. This study expanded the use of ASD on the Go to male participants with ASD (2/4 participants), as well as students in high school (2/4 participants). High school participants were one male and one female, 14 and 17 years old respectively. Social validity questionnaires indicate that ASD on the Go was acceptable participants, with one participant reporting that ASD on the Go "helped me be more socially engaged in conversations". Further research exploring implementation of ASD on the Go modules may expand our knowledge of its effectiveness for individuals with ASD.

METHODS

Overview

The purpose of this study was to explore the effects of a multi-component self-monitoring intervention on the reciprocal social interactions of adolescent females with ASD, and to better understand this type of intervention, especially when used with females diagnosed with high functioning ASD. A self-monitoring and goal setting program along with a social skills curriculum with embedded video modeling was implemented in a clinical setting with two adolescent females diagnosed with high-functioning ASD. The intended outcome was to better understand interventions that may work to increase the social skills of females diagnosed with high functioning ASD.

The following sections discuss the research that took place, the participants that were selected, ethical considerations, interobserver agreement, data collection procedures, parent consumer satisfaction surveys and social validity measures, and instruments used.

Site of the Study. The study took place in a college research facility. In addition to the two participants, the researcher was present as well as a research assistant for approximately half of the sessions. The room in which the intervention was implemented was approximately 8 x 8 ft, and contained a table and chairs. Only items necessary to the intervention were present in this room to limit distractions for participants. The college research facility was located within a building which houses the colleges of Counseling, Leadership, and Special Education. This building is located in an urban area of Southwestern Missouri. Demographic information for this city was obtained from the American Community Survey (United States Census Bureau, 2016). At the time of this study, the population was 89% White, 4% Black, 3.7% Hispanic/Latino, 1.9%

Asian, and 3.2% Multi-race. The city had an estimated population of 167,000 with the overall poverty rate (percent of individuals earning below the set poverty level) being 25.92%.

Participants. Two participants have been selected for the purposes of this study (Table 1). Participant 1, Nancy, was a 13-year-old female diagnosed with high-functioning ASD. She was reported to function within the average range of intelligence and had been observed to display extremely low levels of appropriate reciprocal social interactions. She attended a local school and received her education in the general education environment. Target participant 2, RBG, was a 13-year-old female diagnosed with Asperger's Syndrome. She was reported to function within the average level of intelligence, although she was classified as gifted within certain areas of academic functioning. She had been observed to display low levels of appropriate reciprocal conversation. RBG was homeschooled, although she attended a local school's gifted program once per week. Both participants indicated a desire to make friends and interact appropriately, indicating it was likely they would be motivated to participate in this study. Both participants were given the Child Interview of Social Functioning which, along with caregiver assessments, established areas of social deficits which could be improved to increase the participant's ability to form and maintain relationships (Bellini, 2006).

Table 1. Participant Demographics

Pseudonym	Age	Grade	Ethnicity	IQ Score
Nancy	13	8	Caucasian	105
RBG	13	8	Caucasian	136

Note: Intervention took place across one calendar year; all information is current to the final week of intervention.

Ethical Considerations. Parent permission was obtained through a signed permission document (Appendix A). This document informed each participant's legal guardian(s) of their rights, the basic structure of the study, and how any significant results might be disseminated. The study was approved through the University Institution Review Board (IRB) prior to the beginning of baseline data collection (Appendix B). The IRB for this study (FY2019-133) was approved on November 1st, 2018 and renewed on September 16th, 2019. Each participant was given a pseudonym, and all confidential information which might possibly identify the student was kept in a confidential location. All research materials, including data and video footage, were stored in a secure location and password protected. Each session was video-taped for data and safety purposes, and the participants were supervised at all times by an adult. Any research disclosed beyond the protected research setting contained pseudonyms to protect the participants' identities and only disclosed the information necessary to convey the results of the study in reference to impact of the intervention.

Procedures

Data was collected throughout the 2018-2019 school year. Intervention took place on the same days and times consistently throughout the study.

Pre-Baseline. A reinforcement inventory was completed with both participants to identify possible reinforcers to utilize within the self-monitoring framework (Willis, LaVigna, & Donnellan, 1993). In accordance with the self-monitoring procedures created by Koegel (1990), each participant was asked to identify items which might be reinforcing after self-monitoring. Pre-study social skills assessment measures included the Parent Interview of Social Functioning (Appendix C), Child Interview of Social Functioning (Appendix D), and Autism Social Skills

Profile and the Underlying Characteristics Checklist (UCC-SR-Adolescent) for both parents and participants (Bellini, 2006; Aspy, Grossman, & Quill, 2011)

Baseline and Withdrawal (A1, A2). During baseline sessions, a trained conversation partner was given 10 min to ask each participant at least 10 open-ended questions. These questions encompassed common topics which were age-appropriate, such as "school events, weekend activities, vacations, food, pets, and holidays" (Koegel, Park, & Koegel, 2014, p. 1058). If the participant attempted to initiate conversation or responded to a question, the conversation partner gave a short response and waited up to 5 s to see if the participant would elaborate before asking them another question. Baseline observations were conducted in the college research facility where intervention took place. The researcher only moved from A1 to B1 once a stable trend of at least five data points had been collected. A return to levels similar to those in A1 during A2 indicated the intervention was the variable which caused the changes in B1 and B2.

Intervention and Return to Intervention (B1, B2). After the conclusion of the first baseline phase (A1) participants were taught how to use their self-monitoring sheet during conversation (Appendix E; F). Each participant watched the ASD on the Go Goal Setting module, which explained the concept of self-monitoring. The researcher then provided the participants with definitions for the three verbal components of a reciprocal conversation (Answer the Question, Give More Information, and Ask Another Question). The researcher selected portions of their recorded baseline sessions, and modeled how to score whether the student engaged in all three areas of a reciprocal social interaction (conversation). The participant and researcher watched five videos, and completed self-monitoring sheets together. The researcher gave error correction if a participant made a mistake, and assumed mastery of self-monitoring when the participant could complete a self-monitoring sequence correctly. After

self-monitoring practice, the researcher assisted each participant in setting a realistic goal for how many successful reciprocal interactions they would like to be able to engage in (Appendix G). This intensive training was only conducted at the beginning of the B1 phase.

Self-monitoring sheets were laminated, which allowed the participant to use dry-erase marker to tally points. There were three main boxes containing the three components of a conversation (Answer question, give more information, ask a question). The participant was allowed to pick two preferred illustrations to decorate their card. The bottom half of the card contained one large box. After each successful interaction, the participant gave themselves a tally within the large box. Participants set goals related to how many tallies they believed they could achieve before each session. During intervention, the researcher utilized ASD on the Go social skills training modules to teach a sequence of lessons pertaining to the verbal and non-verbal components of conversation. The following is a brief review of each social skills module used within this study.

1. Starting a Conversation: This module begins by outlining three ways the individual can start a conversation: greeting others, introducing themselves, or making small talk. Each of these methods for starting a conversation is defined and discussed, and a video model of each is provided. The individual is taught the difference between formal and informal greetings, and provided with scenarios of each. The module gives the learner several different greetings, and within the associated worksheet individuals are prompted to list greetings they are familiar and/or comfortable using. Proper methods of introducing oneself are stated and modeled. Finally, small talk topics are introduced and modeled within the module.
2. Asking and Answering Questions, and Staying on Topic: This module begins by explaining the importance of asking and answering questions. The individual is taught that by asking and answering questions, they keep the conversation going, teach the listener about themselves, learn new information, and show their partner that they are interested in the conversation. They are taught that asking questions can introduce new conversation topics. The module emphasizes that asking questions in a conversation keeps it balanced, is polite, and shows that you are sincere. The learner is told that there are three main steps to keeping a conversation going: using good listening skills, asking and answering questions, and understanding “topics”. Each of these components is then described and modeled.
3. Listening Skills: This module explains that listening skills are important because they let your conversation partner know that you are focused and paying attention. It says there are two main components to successful listening skills: focusing and paying attention, and using

body language. The learner is told that listening is very important, and can be very difficult in certain environments. Listening skills such as orienting the body towards the conversation partner, smiling, nodding the head, looking at the person, and using brief phrases of understanding such as "oh," or "huh." The module includes pictures and video models of the previously mentioned listening skills.

4. Ending a Conversation: This module emphasizes that the learner must always try to end conversations politely. It outlines two ways to end a conversation: reading the body language of others, and finding a polite way to end the conversation. The learner is told that keeping a conversation going too long could annoy their conversation partner, and also that walking away without ending the conversation appropriately would be considered rude. Types of body language which indicate a conversation partner is done talking are listed, including using one-word responses, looking at their watch or phone, or slowly moving away. Individuals are taught a variety of phrases to end a conversation, and prompted to come up with their own on the associated worksheet. Each of these skills is modeled and represented visually.
5. Joining Conversations: The Joining Conversations module starts by explaining that joining in a conversation requires the individual to join the conversation of a group of 2 or more people. It categorizes groups into two types: casual and planned. The module describes and defines these types of groups, and gives examples of each. The learner is taught different methods of approaching and joining each group. When completing the associated worksheet, the individual is asked what types of groups they are part of and encouraged to think about joining various groups.
6. Non-Verbal Communication: This module explains that non-verbal communication is a way to give and receive additional information while speaking. It is explained that to understand non-verbal communication, one must know how to use it to communicate with others and how to interpret it to gather meaning. The learner is taught that if their body language does not match their words, their listener will be confused. The module specifies that the 3 types of non-verbal communication are facial expressions, eye contact, and posture. Explanations, examples, and video models are provided for each of these components of non-verbal communication.

ASD on the Go lessons took place throughout all intervention sessions (B1, B2). The researcher used age-appropriate terms when working with the participants in place of the terms used for the dependent variables. Each lesson took place for 15-20 min depending on the length of the module. Afterwards the researcher held a practice session during which the participants were prompted to practice their new skill within a conversation. During a 10-min practice session, the participant engaged in conversation with a partner to practice the new skill. During this session a video was taken for data collection purposes. Visual supports were hung on the wall in view of participants during intervention phases. One poster contained the three verbal

components of conversation with definitions, and the other poster contained the three non-verbal components of conversation with definitions. The verbal poster was hung on the first day of intervention, and the non-verbal poster was hung on the first day of non-verbal lessons during ASD on the Go module training.

The following is a task analysis of session procedures used during this study. Items 1-20 apply to all intervention and return to intervention sessions. Items 14-19 apply to baseline and withdrawal sessions as well as intervention and return to intervention sessions.

1. Therapist provides client with computer showing correct ASD on the Go module (follows predetermined order of modules)
2. Therapist tells participant what module they will be completing.
3. Therapist provides associated worksheet and pencil to client.
4. Therapist prompts client to begin clicking through module.
5. Therapist answers any questions and/or provides technical assistance when necessary.
6. Therapist provides guidance and direct instruction when necessary as participant completes module worksheet.
7. After module is completed, therapist directs participant to take the associated module quiz independently.
8. Therapist discusses any missed quiz questions with client.
9. Therapist hangs verbal and non-verbal posters in view of participant.
10. Therapist seats participant so that facial expressions, posture, and eye contact can be viewed by the camera.
11. Therapist provides participant with their tally sheet and a dry erase marker.
12. Therapist assists participant in setting a goal for the session using the goal sheet.
13. Therapist asks question related to current affairs or ongoing topic of discussion (ex; "Did you see the rain earlier?")
14. A 10-min timer is begun as the therapist finishes asking their first question of the session.
15. Therapist allows 5 s for participant to answer question; if *no* answer within 5 s, therapist asks a new question.
16. If participant answers therapist's question, therapist waits up to 5 s after they stop speaking for them to elaborate and/or ask a reciprocal question.
17. If participant *does not* elaborate and/or ask reciprocal question within 5 s, therapist asks a new question
18. *If participant asks a reciprocal question,* therapist: 1. Answers, 2. Elaborates, and 3. Asks an on-topic reciprocal question
19. In case of a conversation interruption: therapist allows child to interrupt for at least 5 s in order to meet definition of conversation interruption. After 5 s, therapist can ask another question if child pauses at least 2 s. A question asked for clarification or further information about the conversation partner's response does not count as a conversation interruption.

20. After the 10-min session has ended, therapist and participant review whether the goal has been met.

Instrumentation

Data Collection. Data collection for this study was separated into two categories; 1) pre-study assessment, and 2) direct observation in the form of frequency and Likert-scale ratings recorded during the study. Pre-study assessment measures included the Parent Interview of Social Functioning (Appendix C), Child Interview of Social Functioning (Appendix D), and Autism Social Skills Profile (given to parents), as well as the Underlying Characteristics Checklist-Adolescent Self-Report completed by parents and participants (Bellini, 2006; Aspy, Grossman, & Quill, 2011). The results of these assessments provided the researcher with data showing the child's current level of social functioning, and allowed for the selection of specific social deficits which each participant exhibited that may prevent them from forming and keeping relationships (Bellini, 2006). Frequency recording throughout the study consisted of frequency counts of initial reciprocal responses, elaborated reciprocal responses, and reciprocal question-asking (Appendix H). Likert scale ratings throughout the study measured eye contact, facial expression, and posture (Appendix I). If an increase was observed in the verbal components of reciprocal conversations (initial reciprocal responses, elaborated reciprocal responses, and reciprocal question-asking of the participants), as well as nonverbal components, this was indicative of a successful intervention.

Social Validity Measures. Parents were asked to complete a pre- and post-intervention consumer satisfaction survey to determine the social validity of the social skills intervention (Appendix J; K). This survey asked the parents to rate their child's initial reciprocal responses, elaborated reciprocal responses, and reciprocal question-asking as well as several non-verbal

components of conversation. The post-intervention survey also included questions pertaining to satisfaction with the intervention itself. Participants were asked to rate their own conversation skills before and after the intervention, as well as their satisfaction with the intervention afterwards (Appendix L; M). The surveys utilized a 5-point Likert-type scale, which allowed for a quantitative comparison of the parent and participant responses both before and after the intervention took place. An increase in ratings on post-intervention surveys would indicate both satisfaction with the intervention as well as increased quality of social skills.

Interobserver Agreement. Interobserver agreement (IOA) were collected for at least 50% of all sessions throughout the study. In order to ensure that reliability checks were conducted consistently throughout the study, reliability data was gathered for at least 50% of the sessions in each phase. A graduate student taking advanced coursework in the areas of ASD and Applied Behavior Analysis provided all reliability data.

Treatment Fidelity. In order to maintain fidelity of treatment and reliability, the researcher video recorded each session. A fidelity of treatment checklist was created and implemented throughout the study in order to ensure baseline and intervention sessions were implemented consistently across all phases (Appendix N). This checklist consisted of the essential components of conversation sessions and ASD on the Go module training. The fidelity of treatment checklist was completed for 50% of sessions in all phases of the study for both participants.

RESULTS

Participant One

Social Skills Assessment. Prior to the start of the intervention, both participants were given the Underlying Characteristics Checklist-Adolescent Self-Report (Aspy, Grossman, & Quill, 2011), the Child Interview of Social Functioning (Bellini, 2006), and the Reinforcement Inventory for Children (Willis, LaVigna, & Donnellan, 1993). Both parents completed the Autism Social Skills Profile and the Parent Interview of Social Functioning (Bellini, 2006). The results of the Autism Social Skill Profile completed by Nancy's parents indicated that Nancy only occasionally invites peers to join in her activities, joins peers in activities, maintains the "give and take" of conversation, or talks about the interests of others. They stated she tends to avoid eye contact during conversations and fails to maintain an appropriate distance when interacting with peers. She only sometimes considers multiple viewpoints or joins conversations without interrupting. They also indicated that she frequently changes the topic of conversations to align to her self-interests. When answering open-ended questions on the Parent Interview of Social Functioning, Nancy's parents indicated that she is far less comfortable in group settings than in a one-on-one interaction, and she tends to hyper-focus on topics she is interested in. They also indicated she has severe anxiety related to certain situations, typically social, and tends to hide her emotions. One parent wrote that Nancy dislikes prolonged eye contact and appears to be more comfortable interacting with younger children as opposed to peers her age.

Nancy was assisted in completing the Underlying Characteristics Checklist-Adolescent Self-Report). Nancy indicated that she has trouble understanding the feelings of others, feels too shy to approach peers, finds it difficult to make friends, and has difficulty understanding facial

expressions and humor. She also reported having interests that differ from her same-age peers, finds it hard to know when to start and stop talking in conversation, does not typically greet others, has difficulty keeping a conversation going, and is unsure what to say during conversations. She indicated she has difficulty engaging in small talk and sometimes does not know how to express her feelings and thoughts when talking. When answering open-ended questions on the Child Interview of Social Functioning, Nancy said that she has one close friend who shares many of her interests, and feels that a good friend is someone who is kind and listens to you.

Preference Assessment. Nancy was given the Reinforcement Inventory for Children to aide in identifying reinforcers for use during intervention (Willis, LaVigna, & Donnellan, 1993). Results of this indirect assessment indicate Nancy is reinforced by watching fantasy and anime shows and movies online, as well as listening to her favorite music on YouTube. Nancy also indicated that she enjoys drawing, reading fan-fiction, playing board games, computer games, video games, and making crafts. She reported a preference for talking about her dogs, as well as any type of animal.

Baseline (A1). Nancy was video-recorded engaging in 10-min conversation sessions with no prior training. Her correct use of verbal reciprocal conversation components, which consisted of initial responses, elaborated responses, and reciprocal question asking, were scored utilizing frequency of occurrence. Across five baseline (A1) data collection sessions, Nancy had a mean frequency of nine initial responses, seven elaborated responses, and .2 reciprocal questions per conversation (See Fig. 1). Conversation interruptions were also measured utilizing frequency with a mean of 0 for baseline. Nancy's non-verbal reciprocal conversation components, which consisted of facial expression, eye contact, and posture, were scored for each data session

utilizing a Likert-type 5-point scale. Nancy had a mean rating of 2.6 for quality of facial expressions, 2 for eye contact, and 1 for posture (see Table 2).

Intervention (B1). After initial self-monitoring training, Nancy was video-recorded engaging in 10-min conversation sessions following ASD on the Go module training across all intervention sessions. Each ASD on the Go module contained a post-test to determine student mastery of the content being taught (See Table 3). Conversation sessions involved Nancy setting goals for frequency of verbal reciprocal components and self-monitoring of verbal components during conversation. Across 12 intervention (B1) sessions, Nancy had a mean frequency of 17 initial responses, 16 elaborated responses, and 17 reciprocal questions (See Fig. 1). Mean frequency of initial responses increased by 8, elaborated responses by 9, and reciprocal questions by 16.8 from baseline to intervention. Mean frequency of conversation interruptions was 1.8, an increase from 0 in baseline. Nancy's mean non-verbal reciprocal conversation components were rated at 3.3 for facial expression, 3.3 for eye contact, and 2.8 for posture (See Table 2). Mean rating of facial expression increased by 0.7, eye contact by 1.3, and posture by 1.8.

Withdrawal (A2). During the withdrawal phase, ASD on the Go modules were withdrawn, visual support posters were removed from the wall, and Nancy was not provided with her self-monitoring materials. Nancy was video recorded engaging in conversation with her conversation partner for 10 min. Across five withdrawal (A2) sessions, Nancy had a mean frequency of four initial responses, four elaborated responses, and five reciprocal questions (See Fig. 1). Mean frequency of initial responses decreased by 13, elaborated responses by 12, and reciprocal questions by 12 from intervention to withdrawal. Nancy had a mean frequency of four conversation interruptions during this phase. Nancy's mean non-verbal reciprocal conversation components were rated at 3.6 for facial expression, 4 for eye contact, and 2.4 for posture (See

Table 2). Mean rating for facial expressions increased by .3 for facial expression and .7 for eye contact, and decreased by .4 for posture.

Return to Intervention (B2). During return to intervention, Nancy was reintroduced to the use of goal setting, self-monitoring, and ASD on the Go modules during each session. She was video-recorded engaging in conversation for 10-min conversation sessions after engaging in module training. Across nine return to intervention (B2) sessions, Nancy had a mean frequency of 19 initial responses, 16 elaborated responses, and 21 reciprocal questions (See Fig. 1). Mean frequency of initial responses increased by ten, elaborated responses by nine, and reciprocal questions by 20.8 from initial baseline to return to intervention. Mean frequency of conversation interruptions was 1.4. Nancy's mean non-verbal reciprocal conversation components were rated at 4.1 for facial expression, 3.9 for eye contact, and 2.8 for posture. Mean rating for facial expressions increased by 1.5, eye contact by 1.9, and posture by 1.8 from initial baseline to return to intervention (See Table 2).

Maintenance. Nancy participated in two maintenance sessions approximately 2 weeks post-intervention. Nancy engaged in a review of ASD on the Go materials via worksheets completed during intervention, and engaged in self-monitoring and goals setting. Visual supports used during intervention were placed on the wall. During these two maintenance sessions, Nancy had a mean frequency of 19 initial responses, 17 elaborated responses, 23 reciprocal questions, and four conversation interruptions (See Fig. 1). Nancy's mean non-verbal reciprocal conversation components were rated at 4 for facial expression, 4 for eye contact, and 3.5 for posture (See Table 2).

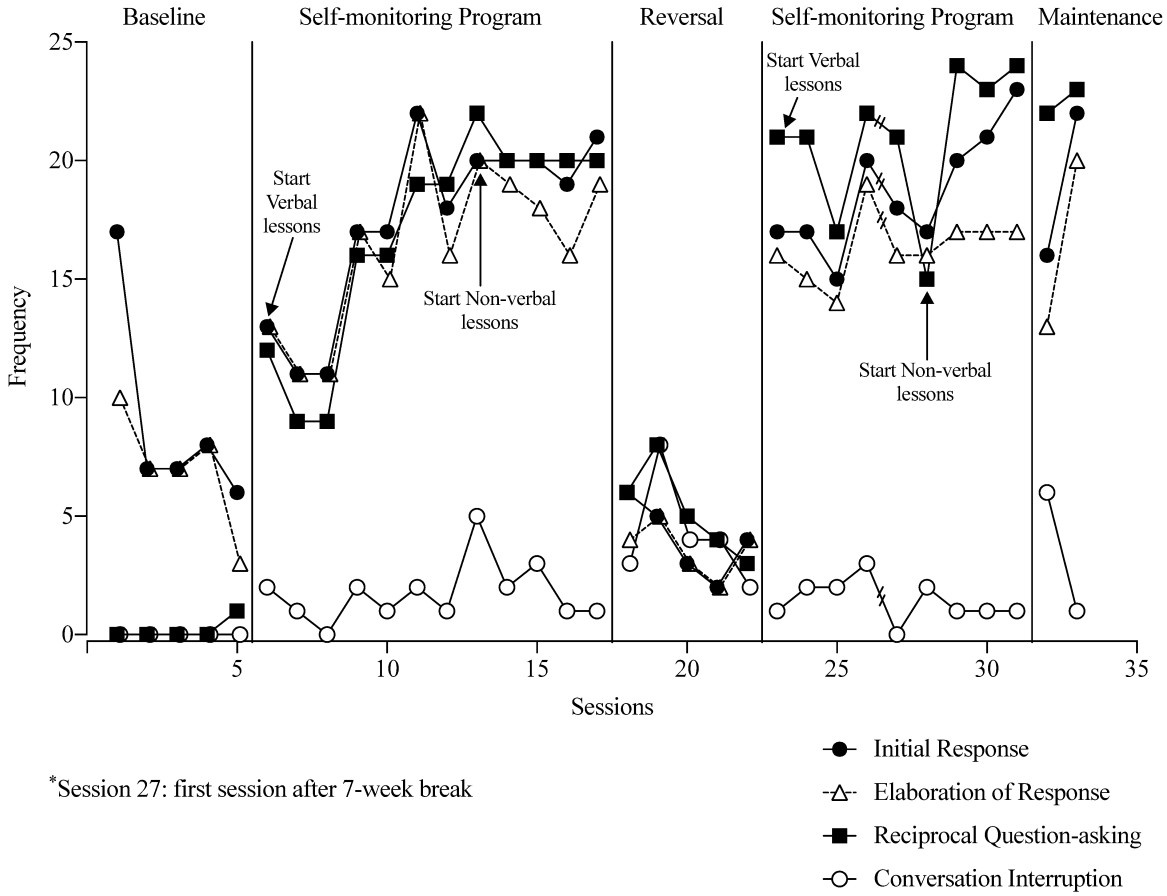

Figure 1. Participant One Frequency of Verbal Reciprocal Conversation Components across Phases

Table 2. Participant One Mean Non-Verbal Component Ratings Across all Phases of Study

Dependent Variable	A1	B1	A2	B2	Maintenance
Facial Expression	2.6	3.3	3.6	4.1	4
Eye Contact	2	3.3	4	3.9	4
Posture	1	2.8	2.4	2.8	3.5
Mean Per Phase	1.9	3.1	3.3	3.6	3.8

Table 3. Participant One Scores on ASD on the Go Post Tests

Module	Score	Percentage
Asking and Answering Questions	8/9	89%
Starting a Conversation	9/9	100%
Ending a Conversation	5/5	100%
Listening	6/6	100%
Joining In	10/10	100%
Non-Verbal Communication	10/10	100%

Participant Two

Social Skills Assessment. Prior to the start of the intervention, RBG's parents each completed the Autism Social Skills Profile (Bellini, 2006). Utilizing a Likert-type scale, both parents indicated that RBG only occasionally takes turns during games and activities, or interacts with peers during structured activities. They indicated that she sometimes engages in one-on-one interactions with peers, maintains the "give-and-take" of conversation, or talks about the interests of others. Both parents indicated that RBG has difficulty recognizing and interpreting facial expressions and body language and maintaining eye contact during conversation, and tends to end conversations abruptly or fail to realize when others are attempting to end a conversation. RBG's parents were also given the Parent Interview of Social Functioning (Bellini, 2006). They indicated through this open-ended questionnaire that RBG has trouble taking turns in conversation and struggles to make eye contact with those who aren't in her immediate family. One parent indicated RBG tends to "monologue" during conversation, wherein she fixates

intensely on one topic of interest rather than following the turn-taking structure of a typical conversation.

RBG was assisted in completing the Underlying Characteristics Checklist-Adolescent Self-Report (UCC-SR-Adolescent) (Aspy, Grossman, & Quill, 2011). RBG indicated she sometimes has difficulty using eye contact, and tends to focus on her own special interests rather than engage in social interactions. She explained that she has trouble with taking others too literally, and tends to say what she is thinking out loud before considering how it might be interpreted by others. RBG said she often is not sure how to talk about others' interests. She said she often feels that peers her age don't share her interests, and has dealt with bullying. She indicated that she prefers structured, organized environments without loud noises, and said that she becomes overwhelmed easily and tends to have meltdowns when overstimulated. When answering open-ended questions on the Child Interview of Social Functioning (Bellini, 2006), RBG said that she feels others may be bothered by her talking too much and interrupting. RBG indicated that she enjoys having friends, especially if they share her interests.

Preference Assessment. RBG was given the Reinforcement Inventory for Children to aide in identifying reinforcers for use during intervention (Willis, LaVigna, & Donnellan, 1993). RBG indicated a preference for various types of chocolate candy and red velvet cupcakes. She identified several areas of interest, including writing, researching various topics, and playing piano. RBG said she spends a lot of time writing original stories as well as fanfiction, and enjoys reading various types of literature. She indicated that she likes playing several video games, including Minecraft, Angry Birds, and Pokémon Go. Some of her other favorite activities are shopping and interacting with her family and pets. She also reported that she enjoys having sleepovers with her friends and talking with them about shared interests.

Baseline (A1). RBG was video-recorded engaging in 10-min conversation sessions with no prior training. Her correct use of verbal reciprocal conversation components, which consisted of initial responses, elaborated responses, and reciprocal question asking, were scored utilizing a frequency count. Across six baseline (A1) data collection sessions, RBG had a mean frequency of two initial responses, two elaborated responses, and zero reciprocal questions per conversation (See Fig. 2). Conversation interruptions were also measured utilizing frequency at a mean of zero for baseline. RBG's non-verbal reciprocal conversation components, which consisted of facial expression, eye contact, and posture, were scored for each data session utilizing a Likert-type 5-point scale. Nancy had a mean rating of 3 for quality of facial expressions, 2.8 for eye contact, and 3 for posture (See Table 4).

Intervention (B1). After initial self-monitoring training, RBG was video-recorded engaging in 10-min conversation sessions following ASD on the Go module training across all intervention sessions. Each ASD on the Go module contained a post-test to determine student mastery of the content being taught (See Table 5). Conversation sessions involved RBG setting goals for frequency of verbal reciprocal components and self-monitoring of verbal components during conversation. Across 13 intervention (B1) sessions, RBG had a mean frequency of 14 initial responses, 13 elaborated responses, and 15 reciprocal questions. Mean frequency of initial responses increased by 12, elaborated responses by 11, and reciprocal questions by 15 from baseline to intervention. Mean frequency of conversation interruptions was three, an increase from zero in baseline. RBG's mean non-verbal reciprocal conversation components were rated at 3.3 for facial expression, 2.5 for eye contact, and 3.5 for posture (See Table 4). Mean rating of facial expression increased by 0.3 and posture increased by 0.5 from baseline to intervention.

Mean ratings of eye contact did not increase, however ratings did trend upward throughout the B1 phase, with eye contact receiving a rating of 4 for the last two sessions of intervention.

Withdrawal (A2). During the withdrawal phase, ASD on the Go modules were discontinued, visual support posters were taken down from the wall, and RBG was not provided with her self-monitoring materials. RBG was video recorded engaging in conversation with her conversation partner for 10 min. Across four withdrawal (A2) sessions, RBG had a mean frequency of one initial response, one elaborated response, and two reciprocal questions (See Fig. 2). Mean frequency of initial responses decreased by 13, elaborated responses by 12, and reciprocal questions by 13 from intervention to withdrawal. RBG had a mean frequency of one conversation interruption during this phase. RBG's mean non-verbal reciprocal conversation components were rated at 3.5 for facial expression, 3.5 for eye contact, and 3.3 for posture (See Table 4). Mean rating for facial expressions increased by .2 for facial expression and 1 for eye contact, and decreased by .2 for posture.

Return to Intervention (B2). During return to intervention, RBG was reintroduced to the use of goal setting, self-monitoring, and ASD on the Go modules during each session She was video-recorded engaging in conversation for 10-min conversation sessions after engaging in module training. Across nine return to intervention (B2) sessions, RBG had a mean frequency of 15 initial responses, 14 elaborated responses, and 17 reciprocal questions (See Fig. 2). Mean frequency of initial responses increased by 13, elaborated responses by 12, and reciprocal questions by 17 from initial baseline to return to intervention. Mean frequency of conversation interruptions was three. RBG's mean non-verbal reciprocal conversation components were rated at 3.9 for facial expression, 3.7 for eye contact, and 3.6 for posture (See Table 4). Mean rating

for facial expressions increased by 0.9, eye contact by 0.9, and posture by 0.6 from initial baseline to return to intervention.

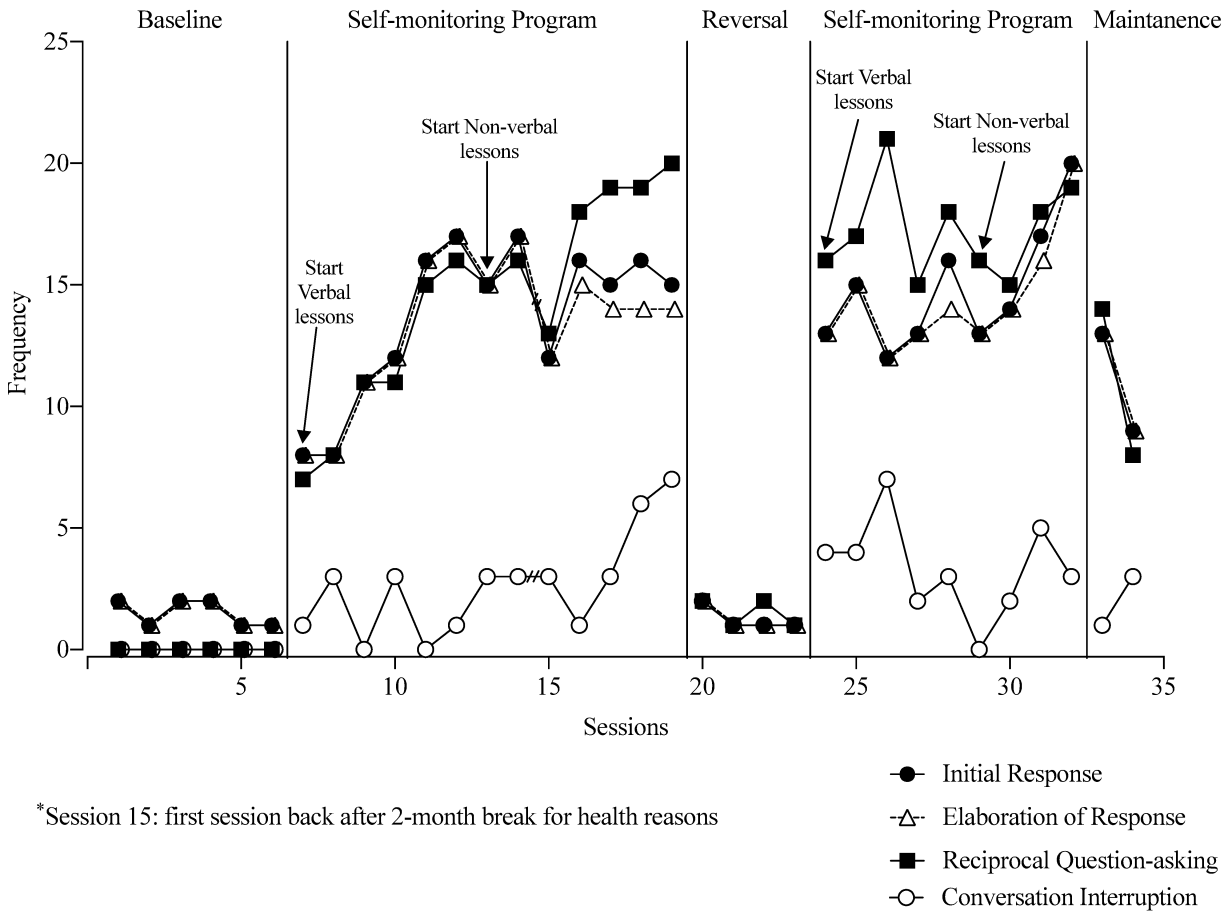

Figure 2. Participant Two Frequency of Verbal Reciprocal Conversation Components across Phases

Maintenance. RBG participated in two maintenance sessions approximately 2 weeks post-intervention. RBG engaged in a review of ASD on the Go materials via worksheets completed during intervention, and engaged in self-monitoring and goals setting. Visual supports used during intervention were placed on the wall. During these 2 maintenance sessions, RBG had

a mean frequency of 11 initial responses, 11 elaborated responses, 11 reciprocal questions, and two conversation interruptions (See Fig. 2). RBG's mean non-verbal reciprocal conversation components were rated at 4 for facial expression, 3.5 for eye contact, and 3.5 for posture (See Table 4).

Table 4. Participant Two Mean Non-Verbal Component Ratings Across all Phases of Study

Dependent Variable	A1	B1	A2	B2	Maintenance
Facial Expression	3	3.3	3.5	3.9	4
Eye Contact	2.8	2.5	3.5	3.7	3.5
Posture	3	3.5	3.3	3.6	3.5
Mean Per Phase	2.9	3.1	3.4	3.7	3.7

Table 5. Participant Two Scores on ASD on the Go Post Tests

Module	Score	Percentage
Asking and Answering Questions	8/9	89%
Starting a Conversation	9/9	100%
Ending a Conversation	5/5	100%
Listening	6/6	100%
Joining In	10/10	100%
Non-Verbal Communication	10/10	100%

Social Validity

Parent Consumer Satisfaction Surveys. Parents of each participant were given a pre-intervention and post-intervention survey to gauge the social validity of the intervention (Table

6). This consumer satisfaction survey was rated using a Likert-type scale in which questions one through five prompted the parent to rate how often their child engaged in certain social skills on a scale in which 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, and 5 = Always. The rating scale for questions 6-9, which were only asked post-intervention, was as follows: 1 = Strongly Disagree, 2 = Somewhat Disagree, 3 = Neither Agree or Disagree, 4 = Somewhat Agree, and 5 = Strongly Agree.

Participant Consumer Satisfaction Surveys. Each participant was given a pre- and post-intervention consumer satisfaction survey to gauge social validity (Table 7). This survey utilized a Likert-type scale, in which the participant rated their response to each question or statement on a 5-point scale in which 1 = Strongly Disagree, 2 = Somewhat Disagree, 3 = Neither Agree or Disagree, 4 = Somewhat Agree, and 5 = Strongly Agree. Questions 6-10 were only asked on the post-intervention survey, and utilized the same rank descriptors.

Interobserver Agreement. Interobserver agreement (IOA) was taken for at least 50% of all sessions in each phase of this study. IOA for Nancy was calculated on 61% of all sessions (Table 8). Percentage of agreement on frequency counts for each verbal dependent variable was calculated. IOA for verbal components of conversation was 100% for baseline, 99% for intervention, 96% for withdrawal, 95% for return to intervention, and 95% for maintenance. IOA was also calculated for non-verbal components, which were scored using a rating scale. A 100% was scored if the data collectors agreed on the rating, and a 0% was scored if the data collectors did not agree. Mean agreement for Nancy across all non-verbal dependent variables was 90% for the entire intervention. IOA for RBG was calculated on 53% of sessions (Table 9). IOA for verbal components was 100% for baseline, 97% for intervention, 100% for withdrawal, 87% for

return to intervention, and 100% for maintenance. Mean agreement for RBG across all non-verbal dependent variables was 92% for the entire intervention.

Table 6. Parent Consumer Satisfaction Surveys – Pre- and Post- Intervention Ratings

Question	Nancy's Father		Nancy's Mother		RBG's Father		RBG's Mother	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
1. Answer when someone asks them a question.	3	3	3	2	3	4	3	3
2. Add relevant information when answering questions.	3	3	3	2	4	3	4	3
3. Ask someone an on-topic question to keep the conversation going.	3	3	3	2	2	3	2	3
4. Make eye contact while talking to others.	2	3	2	3	3	4	3	4
5. Use appropriate facial expressions during conversation.	4	4	4	3	4	4	3	4
(6-9 are post only)	Nancy's Father		Nancy's Mother		RBG's Father		RBG's Mother	
6. I believe my child's social skills have improved since beginning this intervention.	4		4		5		5	
7. I am happy with the results of this intervention	5		5		5		5	
8. I will continue using the methods utilized in this intervention	5		5		5		5	
9. I would recommend this intervention to others	5		5		5		5	

Table 7. Participant Consumer Satisfaction Surveys – Pre- and Post- Intervention Ratings

	Nancy		RBG	
Question	Pre	Post	Pre	Post
1. I answer when someone asks me a question.	4	5	4	5
2. I give enough details when answering questions.	3	4	5	5
3. I ask others on-topic questions to keep conversations going.	3	5	3	5
4. I make eye contact while talking with others.	4	4	2	4
5. I use appropriate facial expressions when talking with others.	5	3	5	5
(6-10 are post-only)	Nancy		RBG	
6. I think self-monitoring helps me have better conversations.	4		5	
7. I think ASD on the Go helped me learn how to have better conversations.	5		5	
8. I enjoy using self-monitoring when having conversations.	4		4	
9. I will keep using self-monitoring when having conversations.	5		5	
10. I would recommend using self-monitoring to a friend who wants to have better conversations.	3		5	

Fidelity of Treatment. A fidelity of treatment checklist was developed and applied to at least 50% of all phases for each participant (See Table 10). Treatment fidelity for Nancy was calculated for 52% of all sessions (Table 10). Fidelity was 100% for baseline, 99% for intervention, 100% for withdrawal, 100% for return to intervention, and 100% for maintenance. Treatment fidelity for RBG was calculated for 50% of all sessions. Fidelity was 95% for

baseline, 99% for intervention, 100% for withdrawal, 100% for return to intervention, and 100% for maintenance.

Table 8. IOA Percentages on Verbal Components for Participant One Across all Phases of Study

Dependent Variable	A1	B1	A2	B2	Maintenance
Initial Response	100%	100%	97%	93%	95%
Elaborated Response	100%	99%	97%	94%	95%
Reciprocal Question-Asking	100%	99%	95%	99%	96%
Mean Per Phase	100%	99%	96%	95%	95%

Table 9. IOA Percentages on Verbal Components for Participant Two Across all Phases of Study

Dependent Variable	A1	B1	A2	B2	Maintenance
Initial Response	100%	99%	100%	85%	100%
Elaborated Response	100%	96%	100%	82%	100%
Reciprocal Question-Asking	100%	96%	100%	95%	100%
Mean Per Phase	100%	97%	100%	87%	100%

Table 10. Fidelity of Treatment Scores for Both Participants Across all Phases of Study

Participant	A1	B1	A2	B2	Maintenance
Nancy	100%	99%	100%	100%	100%
RBG	95%	99%	100%	100%	100%

DISCUSSION

The purpose of this study was to better understand a self-monitoring intervention in conjunction with the social skills curriculum ASD on the Go, which includes embedded video-modeling, when implemented with females diagnosed with high functioning ASD. This intervention package was implemented in a clinical setting with two adolescent females, both 13, who had received a medical diagnosis of ASD. The intended outcome was to better understand interventions that may work to increase the social skills of females diagnosed with high functioning ASD. The dependent variables measured throughout this intervention were divided into two categories: verbal and non-verbal components of reciprocal social interactions. Verbal components included initial responses, elaborated responses, and reciprocal question-asking. Non-verbal components included facial expression, eye contact, and posture.

A wide variety of research exists to support the use of self-monitoring with goal setting for individuals to increase social skills in individuals with ASD (Cooper, Heron, & Heward, 2020). The self-monitoring protocol utilized within the current study was based on research conducted by Koegel, Parks, and Koegel (2014), which showed increases in conversational skills related to implementation of the self-monitoring intervention. The current study expanded this research by applying the self-monitoring intervention to individuals with ASD who were older, female, and had a diagnosis of high-functioning ASD. Research also suggests that video-modeling is an evidence-based practice for increasing social skills in individuals with ASD (Bellini & Akullian, 2007; Reichow & Volkmar, 2010). This study utilized ASD on the Go, a computer-based curriculum with embedded video modeling, to teach social skills to two adolescent females with high-functioning ASD. Preliminary research indicates ASD on the Go

can successfully address a variety of deficits in individuals with ASD (Mason & Gregori, 2019; Mason, Gregori, Wills, Kamps, & Huffman, 2019). This study expanded previous research by utilizing ASD on the Go with participants who were younger and diagnosed with high-functioning ASD, and provides suggestions for future research and modifications regarding the ASD on the Go program (ASDOTG, n.d.).

Research Questions

The first research question addressed by the study was to determine the extent to which a multi-component social skills self-monitoring program would result in a higher frequency of verbal components used during conversation in females with high-functioning ASD. The components of the self-monitoring program were ASD on the Go social skills instruction modules with video-modeling, self-monitoring, and goal setting. The verbal conversation components being measured were initial responding, elaborated responses, and reciprocal question-asking. Both participants engaged in 10-min conversation sessions with the primary researcher during each session. Data were collected on the frequency of each verbal conversation component during conversation sessions.

Both participants exhibited an increased frequency in all three verbal components of conversation which reverted to near baseline levels during a withdrawal phase. This indicates that the social skills self-monitoring program was responsible for the increased frequency of verbal component. During baseline, Nancy demonstrated a mean frequency of nine initial responses, seven elaborated responses, and .2 reciprocals responses (Fig. 1). This increased to a mean frequency of 17 initial responses, 16 elaborated responses, and 17 reciprocal questions during intervention. Mean frequency of verbal components decreased to four initial responses,

four elaborated responses, and five reciprocal questions during a withdrawal phase. During the following return to intervention phase, mean frequency increased to 19 initial responses, 16 elaborated responses, and 21 reciprocal questions. Two-week maintenance probes showed that levels of verbal components had maintained, with mean frequencies being 19 initial responses, 17 elaborated responses, and 23 reciprocal questions.

RBG also showed an elevated frequency in verbal components which reverted to near baseline levels during the withdrawal phase (Fig. 2). Her mean frequency of verbal components during baseline was two initial responses, two elaborated responses, and zero reciprocal questions. This rose to 14 initial responses, 13 elaborated response, and 15 reciprocal questions during intervention. When the intervention was withdrawn, her mean frequency of conversation components decreased to one initial response, one elaborated response, and two reciprocal questions. During the following return to intervention phase, mean frequency rose to 15 initial responses, 14 elaborated responses, and 17 reciprocal questions. During maintenance probes conducted 2 weeks post-intervention, mean frequencies of verbal components were 11 initial responses, 11 elaborated responses, and 11 reciprocal questions. While these are not the levels observed in the last few sessions of the return to intervention phase, they are significantly higher than baseline levels and are more similar to the levels seen in the first few sessions of intervention and return to intervention. This trend indicates the intervention maintained over a two-week period of time. These results, along with the results seen for Nancy, indicate that the intervention was successful in increasing the frequency of verbal reciprocal interaction components for both participants.

The second research question was to determine the extent to which a multi-component social skills self-monitoring program would result in higher quality usage of non-verbal

conversational components, as determined by a Likert-type rating scale. When looking at non-verbal component tables for Nancy (Table 2) and RBG (Table 4), it is apparent that mean ratings of non-verbal components increased across phases. Nancy's overall mean ratings for non-verbal components were 1.9 for baseline, 3.1 for intervention, 3.3 for withdrawal, 3.6 for return to intervention, and 3.8 for maintenance. RBG's overall mean ratings for non-verbal components were 2.9 for baseline, 3.1 for intervention, 3.4 for withdrawal, 3.7 for return to intervention, and 3.7 for maintenance. While both participants exhibited a steady increase in the ratings of their non-verbal conversation components (facial expression, eye contact, and posture) throughout the study, these improvements did not revert to baseline levels during a reversal phase for either participant.

It is hypothesized that removing the task of self-monitoring during the reversal phase could have potentially given the participants more time to consider their use of non-verbal components. While the self-monitoring sheet (for verbal components only) was removed during withdrawal, sessions were still held in the same room, with the same conversation partner. It is possible that the familiar setting may have prompted the participants to be aware of their use of non-verbal conversation skills. Due to the lack of reversal, the improvements in non-verbal conversation skills cannot be causally linked to the multi-component social skills self-monitoring program.

The third research question was the extent to which the effects of a multi-component social skills self-monitoring program for females with high-functioning ASD would maintain over time, as measured by two-week maintenance probes. Conclusions cannot be drawn in reference to non-verbal dependent variables, as these did not react favorably to withdrawal. For both participants, a functional relationship between the effects of the intervention and

maintenance of increased frequency of verbal dependent variables was observed at two-week maintenance probes. Nancy's mean frequency of verbal components during the return to intervention phase was 19 initial responses, 16 elaborated responses, and 21 reciprocal questions. During maintenance probes, mean frequency was 19 initial responses, 17 elaborated responses, and 23 elaborated responses. Frequency of initial responses remained the same, and elaborated responses and reciprocal questions actually increased. RBG's mean frequency during return to intervention was 19 initial responses, 16 elaborated responses, and 21 reciprocal questions. Her mean frequency during maintenance was 11 initial responses, 11 elaborated response, and 11 reciprocal questions. While these means had decreased from return to intervention, they replicate RBG's previous trend during both intervention phases of beginning at a lower mean which was still higher than baseline. This is indicative of an intervention which successfully maintained over time.

The final research question was to what extent a multi-component social skills self-monitoring program would result in socially significant improvements, as determined by parents and participants. This was measured through pre- and post- intervention parent and participant consumer satisfaction surveys (Appendix J; K; L; M). Both participants' mothers' and fathers' results are located Table 6. The first five questions were asked pre- and post-intervention, and the final four questions were only asked post-intervention. The first five questions were utilized to track parent perceptions of their child's conversation skills over time and potential generalization to other settings, while the last four questions were used to determine parent perceptions of the intervention in regards to improvements in conversation skills and acceptability of the intervention. When looking at the first five questions, it can be observed that most scores did not change much. In regards to the last four questions, both parents indicated that

they mostly strongly agreed with all statements. This is indicative of the fact that they believed the intervention improved their child's conversation skills, they found the procedures acceptable, and they would recommend the intervention to others.

Both participants' results are located in Table 7. The first five questions were utilized to track participant perceptions of their conversation skills over time, and the final five questions were used to determine participant perceptions of the helpfulness of self-monitoring and ASD on the Go, their acceptability as an intervention, and participant willingness to continue utilizing self-monitoring or recommend it to a friend. For most responses to the first five questions, both participants indicated an increase in their perception of their ability to engage in appropriate conversation skills. One exception was Nancy's responses to the question related to facial expression pre- and post-intervention, which decreased from five to three. It is hypothesized that this may be due to her increased awareness of the definition of appropriate facial expression following the social skills lessons taught during intervention. Both participants gave ratings of four or five (agree or strongly agree) when answering the final five questions. This indicates that they found the intervention acceptable, and felt that it helped them increase their use of appropriate conversation skills.

Additional Findings

Aside from addressing the initial research questions, several other noteworthy findings were observed during the study. While reinforcement was not initially part of the intervention package, it was implemented during the B1 phase for Participant One (Nancy). Nancy indicated during conversation that she enjoys playing computer games, and would like to work towards computer time at the end of her sessions. It was determined that if Nancy met her goal, she

would earn time playing a computer game with the researcher at the end of each session. According to Lanovas, Dufour, and Argumedes (2017) children with ASD are not always reinforced by social consequences (conversation). It may be necessary to pair highly reinforcing tangibles with a social skills intervention in order to strengthen the social skills being taught. During preference assessments conducted before the intervention, Nancy indicated a preference for computer games, and repeated the desire to play computer games during intervention. Thus, reinforcement became a component of the intervention for Nancy.

Participant Two (RBG) did not indicate the desire to earn reinforcement during the study. During preference assessments before the study, it was determined that RBG is highly reinforced by talking about her preferred topics. Anecdotal observations of conversation sessions during the study confirm that RBG frequently attempted to steer the conversation topic toward her highly preferred topics. Mean frequency of verbal components still increased during intervention phases despite her tendency to talk about preferred topics. This indicated social consequences were strong enough to strengthen the social skills being taught, and may explain why RBG did not indicate a desire to engage in other preferred activities during sessions. These differences in preference may highlight the overall variability in preference for social consequences observed in children diagnosed with ASD (Call, Shillingsburg, Bowen, Reavis, and Findley, 2013).

Another additional finding involves the addition of conversation interruptions as a variable which was measured during conversation sessions. As the first intervention phase began, it was observed that both participants interrupted their conversation partner's turn during conversation (at varying frequencies). Interrupting a conversation partner is socially inappropriate, and also disrupts the flow of conversation by preventing the conversation partner (researcher) from asking a reciprocal question. A protocol was developed within the fidelity of

treatment checklist (Appendix N) to address the steps to be taken by the conversation partner in the case of a conversation interruption. The researcher re-scored all sessions completed before this protocol change to include conversation interruptions. The researcher allowed a conversation interruption to occur for at least 5 s, and then was required to finish their turn by asking their reciprocal question if the participant paused for at least 2 s. The researcher did not directly teach participants not to interrupt conversations, but did emphasize correct turn taking during ASD on the Go module training.

A last additional finding was the scores on module post-tests attained by both participants. Each ASD on the Go module contained a post-test which was meant to measure comprehension of the skills addressed by the video. Nancy's results (Table 3) and RBG's results (Table 5) were identical. Both participants attained a 100% on all post-tests except for one (the Asking and Answering Questions module), in which they both missed the same question. It was noted by researchers that the construction of these post-tests, which were mainly multiple-choice questions, tended to include several potential answers which were excluded easily by the participants, making the correct answer more obvious. This, along with the high scores and participant commentary, may indicate that the post-test questions were potentially not difficult enough to truly gauge their knowledge. Post-tests levelled by ability may have been more useful for assessing comprehension and targeting areas which needed to be retaught.

Limitations

Several potential limitations for the study exist. First, the self-monitoring component of the intervention could not be applied to the non-verbal dependent variables which were being measured. These variables were only subject to the module training and embedded video

modeling aspects of the intervention package. Another limitation is the small sample size (2 participants). The results of this intervention are specific to females with high-functioning ASD, but it cannot be assumed that these results would be the same for children with different demographics. Other individuals with high-functioning ASD may even exhibit different results, as the spectrum of autism is so wide and all children display different characteristics. Another limitation is the lack of generalization data. Data regarding generalization to new conversation partners and new settings would be valuable in understanding the intervention. The primary researcher was the conversation partner for this intervention, which may have led to less reliable withdrawal results, especially in regards to non-verbal conversation skills. A final limitation of this study is the constraints of the social skills modules (ASD on the Go) and the lack of modification to different functioning levels. It is possible that the post-test questions asked during modules were too easy for participants, making it difficult to gauge whether they truly acquired the knowledge being taught.

Future Research

Self-monitoring of non-verbal conversation skills is an area which warrants future research. While the self-monitoring protocol for this intervention was not able to capture non-verbal social skills, a different type of self-monitoring could be utilized to determine whether self-monitoring can increase non-verbal conversation skills. The self-monitoring protocol utilized in this intervention was a real-time self-monitoring sheet, in which participants monitored their use of verbal components of conversation as they engaged in conversation. Non-verbal social skills are unique in that an individual must be able to view themselves in order to engage in self-monitoring. An intervention in which participants view videos of themselves

engaging in conversation or other social scenarios, and self-monitor their non-verbal social skills based on viewing this video, could provide valuable data.

A second area for future research is in early diagnosis and evidence-based interventions for females with high-functioning ASD. Multiple studies have provided evidence that individuals on the higher range of the IQ distribution, especially females, are less likely to receive an early diagnosis than other individuals on the spectrum (Frazier, Georgiades, Bishop, & Hardan, 2014; Volkmar, Szatmari, & Sparrow, 1993; Lai et al., 2011). Early intervention for individuals with ASD is crucial, and the tendency for females with high-functioning ASD to receive a later diagnosis is detrimental to their overall treatment outcomes. Researching methods of identifying and treating this demographic of individuals on the spectrum is important and necessary. Another factor affecting females with high-functioning ASD is their lack of representation within evidence-based research, which is likely due to the higher prevalence rates among males than females (APA, 2013). Including females with high-functioning ASD in studies of social, academic, and behavior interventions for individuals with ASD would be a valuable contribution to the field of ASD-specific literature.

A final area for future research is the utilization of ASD on the Go for individuals with ASD who have varying demographics, including intellectual abilities. ASD on the Go is a social skills curriculum which has been utilized in a few other studies (Mason & Gregori, 2019; Mason, Gregori, Wills, Kamps, & Huffman, 2019). The demographics of the participants within these studies is limited to high-school and college students. Studying the use of ASD on the Go with a variety of ages, genders, and intellectual abilities would help researchers and practitioners determine whether it is a curriculum which would be beneficial for their specific clients and students. Results of the study indicated that the post-tests within ASD on the Go modules may

not have been difficult enough for the participants. Adding leveled post-tests and perhaps leveled modules based on the results of this study may maximize the overall effectiveness and usefulness of ASD on the GO as a computer-based curriculum for teaching to the various deficits exhibited by individuals with ASD.

Summary

This study contributes to previous research in several ways. The results of the study indicate that the intervention package increased mean frequency of verbal reciprocal conversation components. This expands previous research in two ways. First, it extended the use of the self-monitoring intervention utilized by Koegel, Parks, and Koegel (2014) to adolescent females with high-functioning ASD. Second, it expanded the use of ASD on the Go to this same new demographic. A researcher or teacher working with this demographic may consider this intervention package if they are trying to increase the frequency of verbal components utilized by their clients or students. While a functional relationship cannot be determined between the intervention package and an increase in non-verbal components, these dependent variables also increased, as measured by rating scales, throughout the study. More research into the effects of self-monitoring and ASD on the Go in regard to non-verbal social skills should be conducted. Results of the study also indicate that this intervention was determined to be socially valid by parents and participants. This is important as researchers and teachers must be cognizant of the acceptability of the interventions they utilize. The results of this study in terms of increased frequency of verbal components of conversation indicate that the effects maintain over time. An area for future research would be to study generalization of this intervention to other conversation partners and settings. Further replication, isolation of dependent variables, and

application to new demographics would expand and strengthen support for the use of the intervention package for increasing conversational skills in individuals with ASD.

REFERENCES

Algozzine, B., Browder, D., Karvonen, M., Test, D. W., & Wood, W. M. (2001). Effects of interventions to promote self-determination for individuals with disabilities. *Review of Educational Research*, *71*(2), 219-277.

American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). Arlington, VA: Author.

Apple, A. L., Billingsley, F., Schwartz, I. S., & Carr, E. G. (2005). Effects of video modeling alone and with self-management on compliment-giving behaviors of children with high-functioning ASD. *Journal of Positive Behavior Interventions*, *7*(1), 33-46.

Argan, M. (Ed.). (1997). *Student-directed learning: Teaching self-determination skills*. Wadsworth Publishing Company.

ASD on the Go. (n.d.). Retrieved from https://asdonthego.ku.edu

Aspy, R., Grossman, B. G., & Quill, K. A. (2011). *Underlying Characteristics Checklist Manual Including the Individual Strengths and Skills Inventory*. AAPC Publishing.

Azrin, R. D., & Hayes, S. C. (1984). The discrimination of interest within a heterosexual interaction: Training, generalization, and effects on social skills. *Behavior Therapy, 15,* 173-184.

Baio, J. (2018). Prevalence of autism spectrum disorder among children aged 8 years—autism and developmental disabilities monitoring network, 11 sites, United States, 2014. *MMWR Surveillance Summaries*, *67*(6), 1-22.

Bauminger, N., & Kasari, C. (2000). Loneliness and friendship in high-functioning children with autism. *Child Development*, 71, 447–456.

Bellini, S. (2006). *Building social relationships textbook edition: A systematic approach to teaching social interaction skills to children and adolescents with autism spectrum disorders and other social difficulties*. AAPC Publishing.

Bellini, S., & Akullian, J. (2007). A meta-analysis of video modeling and video self-modeling interventions for children and adolescents with autism spectrum disorders. *Exceptional Children*, *73*(3), 264-287.

Bolton, P. F., Golding, J., Emond, A., & Steer, C. D. (2012). Autism spectrum disorder and autistic traits in the Avon Longitudinal Study of Parents and Children: Precursors and early signs. *Journal of the American Academy of Child & Adolescent Psychiatry*, *51*(3), 249-260.

Boudreau, J., & Harvey, M. T. (2013). Increasing recreational initiations for children who have ASD using video self-modeling. *Education and Treatment of Children, 36*, 49–60.

Bradlyn, A. S., Himadi, W.G., Crimmins, D. B. Graves, K. G., & Kelly, L. A. (1983). Conversational skills training for retarded adolescents. *Behavioral Therapy, 14,* 314-325.

Call, N. A., Shillingsburg, M. A., Bowen, C. N., Reavis, A. R., & Findley, A. J. (2013). Direct assessment of preferences for social interactions in children with autism. *Journal of Applied Behavior Analysis*, *46*(4), 821-826.

Carr, M. E., Moore, D. W., & Anderson, A. (2014). Self-management interventions on students with autism: A meta- analysis of single-subject research. *Exceptional Children*, *81*, 28–44.

Catania, A. C. (2013). A natural science of behavior. *Review of General Psychology*, *17*(2), 133-139.

Chafouleas, S., Riley-Tillman, C., & Sugai, G. (2007). School-based behavioral assessment: Informing intervention and instruction. New York: Guilford Press.

Charlop-Christy, M. H., Le, L., & Freeman, K. A. (2000). A comparison of video modeling with in vivo modeling for teaching children with autism. *Journal of Autism and Developmental Disorders*, *30*(6), 537-552.

Christoff, K. A., Scott, W. O. N., Kelley, M. L., Schlundt, D., Baer, G., & Kelly, J. A. (1985). Social skills and social problem-solving training for shy young adolescents. *Behavior Therapy, 16,* 468-477.

Cihak, D., Fahrenkrog, C., Ayres, K. M., & Smith, C. (2010). The use of video modeling via a video iPod and a system of least prompts to improve transitional behaviors for students with autism spectrum disorders in the general education classroom. *Journal of Positive Behavior Interventions*, *12*, 103-115.

Cooper, J. O., Heron, T. E., & Heward, W. L. (2020). *Applied Behavior Analysis* (3rd ed.). Hoboken, NJ: Pearson Education.

Cotugno, A. J. (2009). Social competence and social skills training and intervention for children with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *39*(9), 1268-1277.

Cridland, E., Jones, S., Caputi, P., & Magee, C. (2014). Being a girl in a boys' world: Investigating the experiences of girls with autism spectrum disorders during adolescence. *Journal of Autism and Developmental Disorders, 44*, 1261–1274.

Dotson, W. H., Leaf, J. B., Sheldon, J. B., & Sherman, J. A. (2010). Group teaching of conversational skills to adolescents on the autism spectrum. *Research in Autism Spectrum Disorders*, *4*(2), 199-209.

Dotson, W. H., Leaf, J. B., Sheldon, J. B., & Sherman, J. A. (2010). Group teaching of conversational skills to adolescents on the autism spectrum. *Research in Autism Spectrum Disorders*, *4*(2), 199-209.

Foggo, R. S. V., & Webster, A. A. (2017). Understanding the social experiences of adolescent females on the autism spectrum. *Research in Autism Spectrum Disorders, 35*, 74–85.

Foster, S. L., & Ritchey, W. L. (1979). Issues in the assessment of social competence in children. *Journal of Applied Behavior Analysis, 12,* 625-638.

Fowler, C. H., Konrad, M., Walker, A. R., Test, D. W., & Wood, W. M. (2007). Self-determination interventions' effects on the academic performance of students with developmental disabilities. *Education and Training in Developmental Disabilities*, *42*(3), 270.

Frazier, T. W., Georgiades, S., Bishop, S. L., & Hardan, A. Y. (2014). Behavioral and cognitive characteristics of females and males with autism in the Simons Simplex Collection. *Journal of the American Academy of Child & Adolescent Psychiatry*, *53*(3), 329-340.

Golan, O., & Baron-Cohen, S. (2006). Systemizing empathy: Teaching adults with Asperger syndrome or high-functioning autism to recognize complex emotions using interactive multimedia. *Development and Psychopathology*, *18*, 591-617.

Graff, R. B., & Karsten, A. M. (2012). Assessing preferences of individuals with developmental disabilities: A survey of current practices. *Behavior Analysis in Practice*, *5*(2), 37-48.

Gresham, F. M. (1983). Social skills assessment as a component of mainstreaming placement decisions. *Exceptional Children, 49,* 331-336.

Halladay, A. K., Bishop, S., Constantino, J. N., Daniels, A. M., Koenig, K., Palmer, K., Messinger, D., Pelphrey, K., Sanders, S., Singer, A., Taylor, J. L., & Szatmari, P. (2015). Sex and gender differences in autism spectrum disorder: summarizing evidence gaps and identifying emerging areas of priority. *Molecular Autism*, *6*(1), 1-6.

Hayes, R. L., Halford, W. K., & Varghese, F. T. (1995). Social skills training with chronic schizophrenic patients: Effects on negative symptoms and community functioning. *Behavioral Therapy, 26,* 433-449.

Head, A. M., McGillivray, J. A., & Stokes, M. A. (2014). Gender differences in emotionality and sociability in children with autism spectrum disorders. *Molecular Autism*, *5*(1), 1-9.

Hill, E. L. (2004). Executive dysfunction in autism. *Trends in Cognitive Sciences*, *8*(1), 26-32.

Hopkins, I. M., Gower, M. W., Perez, T. A., Smith, D. S., Amthor, F. R., Wimsatt, F. C., & Biasini, F. J. (2011). Avatar assistant: Improving social skills in students with an ASD through a computer-based intervention. *Journal of Autism and Developmental Disorders*, *41*, 1543-1555.

Hops, H. (1983) Children's social competence and skill: Current research practices and future directions. *Behavior Therapy, 14,* 3-18.

Hughes, C., Kaplan, L., Bernstein, R., Boykin, M., Reilly, C., Brigham, N., Cosgriff, J., Heilingoetter, J., & Harvey, M. (2012). Increasing social interaction skills of secondary school students with autism and/or intellectual disability: A review of interventions. *Research and Practice for Persons with Severe Disabilities*, *37*(4), 288-307.

Hughes, C., Killian, D. J., & Fischer, G. M. (1996). Validation and assessment of a conversational interaction intervention. *American Journal of Mental Retardation: AJMR*, *100*(5), 493-509.

Hume, K., Bellini, S., & Pratt, C. (2005). The usage and perceived outcomes of early intervention and early childhood programs for young children with autism spectrum disorder. *Topics in Early Childhood Special Education*, *25*(4), 195-207.

Individuals with Disabilities Education Act, 20 U.S.C. § 1400 (2004)

Kanai, C., Toth, G., Kuroda, M., Miyake, A., & Itahashi, T. (2017). Social skills in autism spectrum disorders. In J. L. Matson (Ed.), *Handbook of social behavior and skills in children* (pp. 217-248). Cham, Switzerland: Springer International Publishing AG.

Kanner, L. (1943). Autistic disturbances of affective contact. *Nervous Child*, *2*(3), 217-250.

Kazdin, A. E. (1977). Assessing the clinical or applied importance of behavior change through social validation. *Behavior Modification, 1,* 427-451.

Kazdin, A. E. (2011). *Single-case research designs: Methods for clinical and applied settings* (2nd ed.). Oxford University Press.

Kirkovski, M., Enticott, P. G., & Fitzgerald, P. B. (2013). A review of the role of female gender in autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *43*(11), 2584-2603.

Koegel, L. K. (1990). *How to teach self-management to people with severe disabilities: A training manual.* Santa Barbara: University of California.

Koegel, L. K., Park, M. N., & Koegel, R. L. (2014). Using self-management to improve the reciprocal social conversation of children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, *44*(5), 1055-1063.

Koegel, R. L., Frea, W. D., & Surratt, A. V. (1994). Self-management of problematic social behavior. In *Behavioral Issues in Autism* (pp. 81-97). Springer, Boston, MA.

Konrad, M., Fowler, C. H., Walker, A. R., Test, D. W., & Wood, W. M. (2007). Effects of self-determination interventions on the academic skills of students with learning disabilities. *Learning Disability Quarterly*, *30*(2), 89-113.

Lai, M. C., Lombardo, M. V., Pasco, G., Ruigrok, A. N., Wheelwright, S. J., Sadek, S. A., Chakrabarti, B., & Baron-Cohen, S. (2011). A behavioral comparison of male and female adults with high functioning autism spectrum conditions. *PLoS ONE*, *6*(6), e20835.

Laushey, K. M., Heflin, L. J., Shippen, M., Alberto, P. A., & Fredrick, L. (2009). Concept mastery routines to teach social skills to elementary children with high functioning autism. *Journal of Autism and Developmental Disorders*, *39*(10), 1435-1448.

Landa, R., Piven, J., Wzorek, M. M., Gayle, J. O., Chase, G. A., & Folstein, S. E. (1992). Social language use in parents of autistic individuals. *Psychological Medicine*, *22*(1), 245-254.

Lanovaz, M. J., Dufour, M. M., & Argumedes, M. (2017). Behavior analytic methods. In J. L. Matson (Ed.), *Handbook of social behavior and skills in children* (pp. 115-132). Cham, Switzerland: Springer International Publishing AG.

Lee, S. H., Palmer, S. B., & Wehmeyer, M. L. (2009). Goal setting and self-monitoring for students with disabilities: Practical tips and ideas for teachers. *Intervention in School and Clinic*, *44*(3), 139-145.

Liberman, R. P. (1992). *Handbook of psychiatric rehabilitation*. New York: Macmillian.

Libet, J., & Lewinsohn, M. (1973). Concept of social skills with special reference to the behavior of depressed patients. *Journal of Consulting and Clinical Psychology, 401,* 304-312.

Little, S. G., Swangler, J., & Akin-Little, A. (2017). Defining social skills. In J. L. Matson (Ed.), *Handbook of social behavior and skills in children* (pp. 9-17). Cham, Switzerland: Springer International Publishing AG.

Loftin, R. L., Gibb, A. C., & Skiba, R. (2005). Using self-monitoring strategies to address behavior and academic issues. Impact, 18(2), 12-13. Retrieved from the Web site of the Institute on Community Integration, University of Minnesota (http://ici.umn.edu).

Maione, L., & Mirenda, P. (2006). Effects of video modeling and video feedback on peer-directed social language skills of a child with autism. *Journal of Positive Behavior Interventions, 8*, 106–119.

Makrygianni, M. K., Gena, A., Katoudi, S., & Galanis, P. (2018). The effectiveness of applied behavior analytic interventions for children with Autism Spectrum Disorder: A meta-analytic study. *Research in Autism Spectrum Disorders*, *51*, 18-31.

Mandy, W., Chilvers, R., Chowdhury, U., Salter, G., Seigal, A., & Skuse, D. (2012). Sex differences in autism spectrum disorder: Evidence from a large sample of children and adolescents. *Journal of Autism and Developmental Disorders*, *42*(7), 1304-1313.

Mason, R. & Gregori, E. (2019, September). *Effects of Telecoaching on Conversation Skills Among High School and College Students with ASD.* ABAI 10th International Conference, Stockholm, Sweden.

Mason, R. A., Davis, H. S., Boles, M. B., & Goodwyn, F. (2013). Efficacy of point-of-view video modeling: A meta-analysis. *Remedial and Special Education*, *34*, 333-345.

Mason, R. A., Gregori, E., Wills, H. P., Kamps, D., & Huffman, J. (2019). Covert audio coaching to increase question asking by female college students with autism: Proof of concept. *Journal of Developmental and Physical Disabilities,* doi:http://dx.doi.org/10.1007/s10882-019-09684-2

Matson, J. L. & Burns, C. O. (2017). History of social skills. In J. L. Matson (Ed.), *Handbook of social behavior and skills in children* (pp. 1-8). Cham, Switzerland: Springer International Publishing AG.

McCoy, K., & Hermansen, E. (2007). Video modeling for individuals with autism: A review of model types and effects. *Education and Treatment of Children*, *30*(4), 183-213.

McFall, R. M., & Lillesaud, D. B. (1971). Behavioral rehearsal with modeling and coaching in assertion training. *Journal of Abnormal Psychology, 77*, 313-323.

Mineo, B. A., Ziegler, W., Gill, S., & Salkin, D. (2009). Engagement with electronic screen media among students with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, *39*, 172-187.

Morrison, L., Kamps, D., Garcia, J., & Parker, D. (2001). Peer mediation and monitoring strategies to improve initiations and social skills for students with autism. *Journal of Positive Behavior Interventions, 3*(4), 237–250.

Odom, S. L., Collet-Klingenberg, L., Rogers, S. J., & Hatton, D. D. (2010). Evidence-based practices in interventions for children and youth with autism spectrum disorders. *Preventing School Failure: Alternative Education for Children and Youth*, *54*(4), 275-282.

Palmer, S. B., & Wehmeyer, M. L. (2003). Promoting self-determination in early elementary school: Teaching self-regulated problem-solving and goal-setting skills. *Remedial and Special Education*, *24*(2), 115-126.

Panerai, S., Tasca, D., Ferri, R., Genitori D'Arrigo, V., & Elia, M. (2014). Executive functions and adaptive behaviour in autism spectrum disorders with and without intellectual disability. *Psychiatry Journal*, *2014*.

Paul, R., Miles, S., Cicchetti, D., Sparrow, S., Klin, A., Volkmar, F., Coflin, M., & Booker, S. (2004). Adaptive behavior in autism and pervasive developmental disorder-not otherwise specified: Microanalysis of scores on the Vineland Adaptive Behavior Scales. *Journal of Autism and Developmental Disorders*, *34*(2), 223-228.

Rafferty, L. A. (2010). Step-by-step: Teaching students to self-monitor. *Teaching Exceptional Children, 43*(2), 50-58.

Reichow, B., & Volkmar, F. R. (2010). Social skills interventions for individuals with autism: Evaluation for evidence-based practices within a best evidence synthesis framework. *Journal of Autism and Developmental Disorders, 40*, 149–166.

Resetar, J. L., & Noell, G. H. (2008). Evaluating preference assessments for use in the general education population. *Journal of Applied Behavior Analysis*, *41*(3), 447-451.

Reynolds, B. M., Gast, D. L., & Luscre, D. (2016). Self-management of social initiations by kindergarten students with disabilities in the general education classroom. *Journal of Positive Behavior Interventions, 16*(3), 137–148.

Richter, S., & Test, D. (2011). Effects of multimedia social stories on knowledge of adult outcomes and opportunities among transition-aged youth with significant cognitive disabilities. *Education and Training in Autism and Developmental Disabilities*, 410-424.

Rotatori, A. F., Fox, R., & Switzky, H. (1979). A parent-teacher administered weight reduction program for obese Down's Syndrome adolescents. *Journal of Behavior Therapy and Experimental Psychiatry*, *10*(4), 339-341.

Sackett, D. L., Rosenberg, W. M., Gray, J. M., Haynes, R. B., & Richardson, S. (2007). Evidence based medicine: What it is and what it isn't. *Clinical Orthopaedics and Related Research*, *455*, 3-5.

Sands, D. J., & Doll, B. (1998). Student involvement in goal setting and educational decision making: Foundations for effective instruction. *Making it happen: Student involvement in education planning, decision making, and instruction*, 45-74.

Schopler, E., & Mesibov, G. B. (Eds.). (1983). *Autism in adolescents and adults*. New York, NY: Plenum Press.

Senju, A., Southgate, V., White, S., & Frith, U. (2009). Mindblind eyes: An absence of spontaneous theory of mind in Asperger syndrome. *Science*, *325*(5942), 883-885.

Sherer, M., Pierce, K. L., Paredes, S., Kisacky, K. L., Ingersoll, B., & Schreibman, L. (2001). Enhancing conversation skills in children with autism via video technology: Which is better, "self" or "other" as a model? *Behavior Modification, 25*(1), 140–158.

Silver, M., & Oakes, P. (2001). Evaluation of a new computer intervention to teach people with autism or Asperger syndrome to recognize and predict emotions in others. *Autism*, *5*(3), 299-316.

Tantam, D. (2003). The challenge of adolescents and adults with Asperger syndromes. *Child and Adolescent Psychiatric Clinics of North America, 12*(1), 143-163.

U.S. Department of Education. (2008). *No child left behind*. Washington, DC: Author. Retrieved July 31, 2018 from http://www.ed.gov/nclb/landing.jhtml

United States Census Bureau (2016). *American community survey: 5-year estimates.* Washington, DC: U.S. Government Printing Office.

Volkmar, F. R., Szatmari, P., & Sparrow, S. S. (1993). Sex differences in pervasive developmental disorders. *Journal of Autism and Developmental Disorders*, *23*(4), 579-591.

Walker, H. M., Schwarz, I. E., Nippold, M. A., Irvin, L. K., & Noell, J. W. (1994). Social skills in school-age children and youth: Issues and best practices in assessment and intervention. *Topics in Language Disorders*.

Webber, J., Scheuermann, B., McCall, C., & Coleman, M. (1993). Research on self-monitoring as a behavior management technique in special education classrooms: A descriptive review. *Remedial & Special Education, 14*(2), 38-56.

Willis, T. J., LaVigna, G. W., & Donnellan, A. M. (1993). *Behavior assessment guide*. Institute for Applied Behavior Analysis.

Wolf, M. M. (1978). Social validity: The case for subjective measurement or how behavior analysis is finding its heart. *Journal of Applied Behavior Analysis, 11,* 203-214.

Wong, C., Odom, S. L., Hume, K. A., Cox, A. W., Fettig, A., Kucharczyk, S., Brock, M. E., Plavnick, J. B. Fleury, V. P., & Schultz, T. R. (2015). Evidence-based practices for children, youth, and young adults with autism spectrum disorder: A comprehensive review. *Journal of Autism and Developmental Disorders*, *45*(7), 1951-1966.

Wright, J. (2013). How the common core works: How to teach students to change behaviors through self-monitoring [PDF Handout]. Retrieved from www. interventioncentral.org.

Zwaigenbaum, L., Bryson, S. E., Szatmari, P., Brian, J., Smith, I. M., Roberts, W., Vaillancourt, T., & Roncadin, C. (2012). Sex differences in children with autism spectrum disorder identified within a high-risk infant cohort. *Journal of Autism and Developmental Disorders*, *42*(12), 2585-2596.

APPENDICES

Appendix A. Parent Permission Form

PARENT CONSENT FOR PARTICIPANT

Dear Parent,

Missouri State University supports the practice of protection for human participants taking part in our research. A graduate student at Missouri State University is researching an intervention to increase the appropriate reciprocal social interactions of students diagnosed with Autism Spectrum Disorder. The following information is provided for you to decide whether you wish your child to participate in this study. You may refuse to sign this form and not have your child participate in this study. You should be aware that even if you agree to participate, you are free to withdraw your child from the study at any time. If you do withdraw from this study, it will not affect any relationships you may have with Missouri State University and any other services it may provide to your child.

What is the purpose of this study?
The purpose of this study is to improve the appropriate reciprocal social interactions of adolescents who are diagnosed with autism. Your child has been nominated due to fitting the demographic chosen for the present study. We are requesting permission to improve this social behavior in your child.

What are the behavioral assessments?
Assessment for behavior includes parent and participant interviews, a social skills profile, and observations of positive social behaviors. The observations will be conducted by the graduate student researcher with assistance from the Missouri State University staff.

What are the appropriate social interaction interventions?
The appropriate social interaction interventions are chosen based on best practices, and include the following:
1. Training Sessions: Participants will be taught specifically how to engage in appropriate reciprocal social interactions with others, through the use of self-monitoring, goal setting, and video modeling.
2. Video Modeling Procedures: Participants will be video recorded engaging in appropriate social interactions with others. Videos will be used to help participants engage in appropriate social interactions.
3. Data Sessions: Participants will be given the opportunity to interact with others for 15 minutes per session. These 15-minute sessions will be recorded, and a portion will be watched by the graduate student researcher. While watching, the graduate student researcher will identify and evaluate the appropriate social interactions that took place in the video recording.

What are the benefits of your child participating in this study?
All participants in this study may benefit from the training and intervention. We expect to see more appropriate reciprocal social interactions during direct conversation scenarios throughout the study. Your child's participation is voluntary and you are free to withdraw at any time without penalty. If you agree, the graduate student researcher will implement research-based strategies to help improve the positive social behavior of your child.

What are the confidentiality procedures?
Missouri State University supports the practice of protection for human participants taking part in our research programs. Your permission allows a copy of all information obtained from assessment and interventions to be provided to the Missouri State University staff involved in this study. This information will be kept confidential in closed files at Missouri State University. All video recordings will be password protected and kept in a locked room. Information from assessments or observations shared in verbal or written reports will be shared only with project staff and will be available for parents to review.

If you agree to allow your child to participate, please sign the attached form and return it to either McKenzie Bacon or Dr. Linda Garrison-Kane. Should you desire any additional information or have questions, please call Ms. Bacon at (417) 840-6494 or email at bacon94@live.missouristate.edu.

Sincerely,

McKenzie Bacon

Dr. Garrison-Kane
Missouri State University Professor
(417) 836-6960
LGKane@MissouriState.edu

PARTICIPANT CERTIFICATION

If you agree to have your child participate in this study please sign where indicated, then return this page to either McKenzie Bacon or Dr. Linda Garrison-Kane. Keep the consent information for your records.

I have read this Consent and Authorization form. I have had the opportunity to ask, and I have received answers to, any questions I had regarding the study, use, and disclosure of any information about my child for the study.

I agree to allow my child to take part in this study. By my signature I affirm that I am the parent/guardian of the child and that I have received a copy of this Consent and Authorization form. I understand this means he/she may be observed and that information will be used to help guide the intervention process.

Assistance with reciprocal social interaction support will be developed by the graduate student researcher with consultation from Missouri State University. I understand that my permission allows for video-recorded observation of my child and sharing of collected data with project staff.

_____
Child's first and last name

_____
Print parent's name

_____
Parent's signature

_____
Date

With my signature I affirm that I have been given a copy of this consent form.
I understand that if I have any additional questions about my rights as a research participant, I may call (417) 523-3183.

Appendix B. IRB Approval Certificate

Date: 12-16-2019

IRB #: IRB-FY2019-133
Title: The Effects of a Multi-Component Social Skills Self-Monitoring Program on Two Females with Autism Spectrum Disorder
Creation Date: 8-31-2018
End Date: 9-24-2020
Status: Approved
Principal Investigator: Linda Garrison-Kane
Review Board: MSU
Sponsor:

Study History

Submission Type Initial	Review Type Expedited	Decision Approved
Submission Type Renewal	Review Type Expedited	Decision Approved

Key Study Contacts

Member Linda Garrison-Kane	Role Principal Investigator	Contact lgkane@missouristate.edu
Member McKenzie Bacon	Role Primary Contact	Contact bacon94@live.missouristate.edu
Member Megan Boyle	Role Co-Principal Investigator	Contact meganboyle@missouristate.edu
Member D Mitchell	Role Co-Principal Investigator	Contact waynemitchell@missouristate.edu
Member McKenzie Bacon	Role Investigator	Contact bacon94@live.missouristate.edu
Member Taylor Janota	Role Investigator	Contact janota15@live.missouristate.edu

Initial Submission

1. General Information

1A. What is the full title of the research protocol?

The Effects of a Multi-Component Social Skills Self-Monitoring Program on Two Females Diagnosed with Autism Spectrum Disorder

Abstract/Summary

1B. Please provide a brief description of the project (no more than a few sentences).

The purpose of this study will be three-fold. First, the researcher wishes to determine the effects of a multi-component social skills self-monitoring program on the reciprocal conversation skills of two females diagnosed with high-functioning autism (Koegel, Park, & Koegel, 2014) This multi-component program will include the following evidence-based practices: Social skills self-monitoring (Koegel, Parks, & Koegel, 2014), goal setting (Lee, Palmer & Wehmeyer, 2003), and video modeling (Charlop-Christy, Le, & Freeman, 2000). Second, the researcher hopes to determine how socially important this intervention will be for the participants. Finally, the researcher hopes to determine how well this intervention generalizes to novel conversation partners.

Who is the Principal Investigator?

1C. *This MUST be a faculty or staff member.*

Name: Linda Garrison-Kane
Organization: Counseling Ldrshp & Special Ed
Address: 901 S National Ave , Springfield, MO 65897-0027
Phone: 417-836-6960
Email: lgkane@missouristate.edu

Who is the primary study contact?

1D.

This person may be the Principal Investigator or someone else (faculty, staff, or student). This person, in addition to the PI, will be included on all correspondence related to this project.

Name: McKenzie Bacon
Organization: Counseling Ldrshp & Special Ed
Address: 901, S. National Avenue , Springfield, MO 65897-0027
Phone:
Email: bacon94@live.missouristate.edu

Select the Co-Principal Investigator(s).

1E.

This MUST be a faculty or staff member. ***Persons listed as Co-PIs will be required to certify the protocol*** *(in addition to the PI). This person will also be included on all correspondence related to this project.*

Name: Megan Boyle
Organization: Counseling Ldrshp & Special Ed
Address: 901 S National Ave , Springfield, MO 65897-0027
Phone: 417-836-4140
Email: meganboyle@missouristate.edu

Name: D Mitchell
Organization: Psychology
Address: 901 S National Ave , Springfield, MO 65897-0027
Phone: 417-836-6941
Email: waynemitchell@missouristate.edu

Select the Investigator(s).

1F.

An investigator may be faculty, staff, student, or unaffiliated individuals.

Name: McKenzie Bacon
Organization: Counseling Ldrshp & Special Ed
Address: 901, S. National Avenue , Springfield, MO 65897-0027

Phone:
Email: bacon94@live.missouristate.edu

Name: Taylor Janota
Organization: Communication Sciences & Disor
Address: 901, S. National Avenue , Springfield, MO 65897-0027
Phone:
Email: janota15@live.missouristate.edu

If you could not locate personnel using the "Find People" button, please request access at Cayuse Logon Request

For additional help, email irb@missouristate.edu.

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2. Research Protocol

Describe the proposed project in a manner that allows the IRB to gain a sense of the project including:

- the research questions and objectives,
- key background literature (supportive and contradictory) with references, and
- the manner in which the proposed project will improve the understanding of the chosen topic.

2A.

A single subject design ABAB withdrawal design (Kazdin, 2017) will be used to assess the establishment of a functional relationship between the independent (intervention) and dependent variables.

The independent variable is a multi-component package that will include the following components: social skills instruction in initiating and responding to conversations, social skills self-monitoring, video modeling, and goal-setting.

Social skills instruction includes the explicit teaching of initiating and responding, and is an evidence-based practice for increasing the social interactions of children with autism (Morrison, Kamps, Garcia, & Parker, 2001). Self-monitoring, more specifically social skills self-monitoring, is a technique which teaches a child to monitor their own use of appropriate social skills and increase their success and independence in social interactions (Koegel, Parks, & Koegel, 2014). Video-modeling can be used in place of in-person modeling when teaching social skills to children with autism. It has been shown that video-modeling as opposed to in-person modeling minimizes the risk of errors made when modeling in-person, and correlates with increased intervention success (Charlop-Christy, Le, & Freeman, 2000). Goal-setting during interventions has been shown to increase participant motivation in the intervention process (Palmer & Wehmeyer, 2003). The researcher will assist each participant in setting their own goals and tracking their progress related to gaining appropriate social skills.

The research questions are as follows:
1. Will a multi-component social skills self-monitoring program result in higher levels of elaborated responses in females diagnosed with autism?
2. Will a multi-component social skills self-monitoring program result in higher levels of reciprocal question-asking in females with high-functioning autism?
3. Will a multi-component social skills self-monitoring program result in higher levels of eye contact, appropriate facial expression, and correct proximity during reciprocal social interactions in females diagnosed with autism?
4. Will the effects of a multi-component social skills self-monitoring program generalize to new conversational partners after intervention has commenced?
5.Will a multi-component social skills self-monitoring program result in socially significant improvements in the reciprocal social interactions of females diagnosed with autism?

It is hypothesized that providing the two participants with social skills instruction on how to initiate and maintain conversations and embedding additional research based instruction (self-management, video modeling and goal setting) that this multi-component social skills program will increase their ability to have meaningful conversations with peers and family members.

The primary deficit in Autism Spectrum disorder is in the area of social skills. Social skills self-monitoring, which is the main component of this intervention, has shown promise in previous research (Koegel, Parks, & Koegel, 2014). The researcher would like to contribute to research in the area of self-monitoring and associated best practices by implementing the intervention with a new demographic (females diagnosed with Autism Spectrum Disorder).

2B. Check all research activities that apply:

- ✓ Audio, video, digital, or image recordings
- Biohazards (e.g., rDNA, infectious agents, select agents, toxins)
- Biological sampling (other than blood)
- Blood drawing
- Class Protocol (or Program or Umbrella Protocol)
- Data, not publicly available
- Data, publicly available
- Deception
- Devices
- Diet, exercise, or sleep modifications
- Drugs or biologics
- ✓ Focus groups
- Internet or email data collection
- Materials that may be considered sensitive, offensive, threatening, or degrading
- Non-invasive medical procedures
- ✓ Observation of participants

Oral history

Placebo

Record review

Specimen research

Surgical procedures

✓ Surveys, questionnaires, or interviews (one-on-one)

Surveys, questionnaires, or interviews (group)

Other

Describe the procedures and methods planned for carrying out the study. Make sure to include the following:

- site selection,
- the procedures used to gain permission to carry out research at the selected site(s),
- data collection procedures,
- and an overview of the manner in which data will be analyzed.

Provide all information necessary for the IRB to be clear about **all** of the contact human participants will have with the project.

Parent participants will assist in collecting data on both participants through the length of the study. In addition, direct observation data will be collected in a clinical site on the MSU campus (site selected for all phases of the study to take place).

All sessions will be video taped to assist the researchers in assessing the dependent variables, assess fidelity of treatment during the intervention phases and to provide the participants an opportunity to self-monitor the acquisition of the social skills during the intervention phase. During treatment phases, the participants will self-monitor their conversation skills, eye contact, appropriate facial responding and physical posturing during conversations.

Pre-baseline Measures include: Social skills assessment surveys to be completed by the parents and the participants (see attached in Section 2D), and the completion of a reinforcement inventory with both participants (see attached in 9G).

Baseline Measures: Repeated Observational measures of frequency, duration, eye contact, facial responding and physical posturing (see attached in Section 2D) will be assessed during each

session throughout the study.

Intervention (treatment) will also be conducted on campus. Parent permission (see attachment under Informed Consent) will be collected and parent input will be obtained throughout the length of the study.

2C. Intervention will consist of implementing the components of the independent variable. These include a self-monitoring procedure, goal setting, and video-modeling procedures. These will be guided by the implementation of an overall social skills curriculum called ASD on the Go (see attached curriculum description in Supporting Documents). ASD on the Go is an online program which consists of three social skill domains: organization, social communication, and problem solving. Within each domain are 20-25 minute modules focusing on specific skills. The modules are equipped with social skills lessons, video examples, comprehension quizzes, and post-tests. Social Communication modules related to the independent variable (goal setting, self, monitoring, and reciprocal social interaction components) will be selected and participants will be required to progress through each module throughout the intervention. Participants will first watch the self-monitoring module and learn how to use the self-monitoring form (attached in Supporting Documents). They will be introduced to the dependent variables, and practice self-monitoring their use of the dependent variables by watching videos of their interactions taken during baseline. They will then progress through the modules which explicitly teach each dependent variable. They will self monitor the first 3 dependent variables in real time (initial response, elaboration of response, and reciprocal question asking). They will self-monitor the last 3 dependent variables (eye contact, facial expression, and proximity) at the beginning of their next session. They will watch video taken during the session and use event recording to determine whether or not they used correct eye contact, facial expression, or proximity during each reciprocal interaction. Goal setting will begin at the beginning of intervention, and will include setting goals related to mastery of the dependent variables.

Direct Observational data will be recorded via videos of each sessions. Dependent variables include: initial response, elaboration of response, reciprocal question-asking, facial expression, proximity, eye contact, and duration of conversation. Fidelity of treatment data will be obtained from the treatment videos during intervention (phases 2 and 4).

Social Validity measures will be implemented to ensure the social importance and acceptability of the procedures of the intervention to participants, parents, and those unfamiliar with the intervention. These measures will include Pre- and Post- questionnaires given to parents and participants, and a questionnaire to be completed several times throughout the intervention by naive observers (undergraduate students in the special education program). See attachments in Section 9G.

Visual analysis will be conducted during each phase of the investigation upon the graphing of data to ensure an adequate representation of baseline (five repeated measures or more depending upon trend line), and visual inspection of the data trend established within treatment phases to ensure increases in the dependent variable(s) thereby ensuring the establishment of a functional relationship between the independent and dependent variables.

Attach surveys, questionnaires, and other social-behavioral measurement tools, if applicable.

2D. Autism Social Skills Profile.pdf
Child Interview of Social Functioning.pdf
Parent Interview of Social Functioning.pdf
Duration Data Sheet.docx
Frequency Data Sheet 1.docx
Frequency Data Sheet 2.docx

3. Participants

3A. Specify the participant population(s). Check all that apply.

- Adults
- ✓ Children (<18 years)
- Adults with decisional impairment
- Non-English speaking
- Student research pools (e.g. psychology)
- Pregnant women or fetuses
- Prisoners
- Unknown (e.g., secondary use of data/specimens, non-targeted surveys, program/class/umbrella protocols)

3B. Specify the age(s) of the individuals who may participate in the research.

Two individuals diagnosed with Autism Spectrum Disorder have been selected for this study. Both participants have worked with the Principle Investigator on previous projects.

3C. Describe the characteristics of the proposed participants, and explain how the nature of the research requires/justifies their inclusion.

As previously stated in 3B, both participants have a diagnosis of ASD, both participants have social communication deficits and both participants' parents have given consent for their daughters to participate in this study.

3D. Provide the total number of participants (or number of participant records, specimens, etc.) for whom you are seeking Missouri State IRB approval.

This Single Subject Design Study will include 2 females (12-13) who are diagnosed with Autism Spectrum Disorder.

3F. Estimate the time required from each participant, including individual interactions, total time commitment, and long-term follow-up, if any.

This study will be conducted during the Fall and Spring semesters (9-2018 until 5-2019). Sessions will occur twice weekly for approximately one hour each session.

3G. Describe how potential participants will be identified (e.g., advertising, individuals known to investigator, record review, etc.). Explain how investigator(s) will gain access to this population, as applicable.

Not applicable.

3H. Describe the recruitment process; including the setting in which recruitment will take place. Provide copies of proposed recruitment materials (e.g., ads, flyers, website postings, recruitment letters, and oral/written scripts).

Not applicable.

3H.1. Attach recruitment materials, if applicable.

3l. Will participants receive compensation or other incentives (e.g., free services, cash payments, gift certificates, parking, classroom credit, travel reimbursement, etc.) to participate in the research study?

Yes

✓ No

4. Informed Consent

4A. From the list below, indicate how consent will be obtained for this study.

Check all that apply.

- Written/signed consent by the subject
- ✓ Written/signed consent (permission) for a minor by a Parent or Legal Guardian
- Written/signed consent by a Legally Authorized Representative (for adults incapable of consenting).
- Request for Waiver of Documentation of Consent (e.g. Verbal Consent, Anonymous Surveys, etc.)
- Waiver of parental permission
- Consent will not be obtained from subjects (Waiver of Consent)

4B. Describe the consent process including where and by whom the subjects will be approached, the plans to ensure the privacy of the subjects and the measures to ensure that subjects understand the nature of the study, its procedures, risks and benefits and that they freely grant their consent.

Due to the age of the participant, both participants' parents will meet with the principle investigator and co-investigator and review the research protocol. Written informed consent will be obtained and weekly updates will be provided to the parents during the entire length of the study. At any time during the study, the parents will have an opportunity to withdraw their child from the study.

4B.1. Attach all copies of informed consent documents (written or verbal) that will be used for this study.

Parent Permission Form.docxSample documents: Informed Consent Examples

4B.2. Attach all copies of assent documents that will be used for this study, if applicable.

Sample documents: Assent Examples

5. Risks and Benefits

Describe all reasonably expected risks, harms, and/or discomforts that may apply to the research. Discuss severity and likelihood of occurrence.

5A.

Consider the range of risks - physical, psychological, social, legal, and economic.
Lack of social competence is a primary deficit in individuals with autism. This intervention is a social skills program that should increase the conversation skills of the two participants. There are no known risks to the participants.

Describe the steps that will be taken to minimize risks and the likelihood of harm.

5B.

Both participants will be given pseudonyms to ensure confidentiality. Both participants can terminate the session if they are uncomfortable at any time during the social skills sessions.

There are no additional risk known to these participants.

List the potential benefits that participants may expect as a result of this research study. State if there are no direct benefits to individual participants.

5C.

Both participants have a medical diagnosis of Autism Spectrum Disorder. Both participants struggle with engaging in social conversations with peers and family members. The purpose of this study is to increase their conversation skills and to increase their awareness of nonverbal social behaviors that will increase their ability to initiate and maintain conversations. Social competency is a necessary skill set for all individuals. Given that social communication is a key deficit for individuals with autism, providing these two participants with the opportunity to increase their social behaviors will have a direct effect on the participants (Attwood, 2000). Increased social awareness leads to increased social acceptance. Parents may expect to have more meaningful reciprocal interactions with their children, and child participants may expect gain critical skills necessary to have more meaningful reciprocal interactions with parents, other family, and friends.

5D. Describe any potential indirect benefits to future subjects, science, and society.

Due to the fact that this is a single-subject design including only 2 participants of the same demographic, the results can not be generalized to other scenarios. This study will contribute to literature about self-monitoring of social skills and associated best practices, as well as add new information about its use with females diagnosed with autism.

5E. Discuss how risks to participants are reasonable when compared to the anticipated benefits to participants (if any) and the importance of the knowledge that may reasonably be expected to result.

There are no known foreseeable risks (see 5C for importance).

6. Data Collection

Missouri State University is committed to keeping data and information secure. Please review the Missouri State Information Security policies. Discuss your project with the MSU Information Security Office or your College's IT support staff if you have questions about how to handle your data appropriately.

6A. Statement of Principal Investigator Responsibility for Data

The principal investigator of this study is responsible for the storage, oversight, and disposal of all data associated with this study. Data will not be disseminated without the explicit approval of the principal investigator, and identifying information associated with the data will not be shared.

✓ By checking this box, all personnel associated with this study understand and agree to the Statement of Principal Investigator Responsibility for Data.

6B. How will the data for this study be collect/stored?

Check all that apply.

✓ Electronic storage format

✓ On paper

Describe where the data will be stored (e.g., paper forms, flash drives or removable media, desktop or laptop computer, server, research storage area network, external source) and describe the plan to ensure the security and confidentiality of the records

(e.g., locked office, locked file cabinet, password-protected computer or files, encrypted data files, database limited to coded data, master list stored in separate location).

6C. *At minimum, physical data should always be secured by lock and key when stored. Electronic data should be stored on University secure servers whenever possible (Office 365 or other secure campus server). If data has to be stored off campus, the file should be encrypted and the device password protected. Additionally, any data to be shared outside the University network will require a SUDERS request be filed and approved. See https://mis.missouristate.edu/Central/suders/creat...*

All data collected for this study will be stored by the Principal Investigator of the study.
All electronic data will be password protected and participants names will be changed to assist in protecting their anonymity.
All electronic dta will be stored on MSU secure servers by the Principle Investigator of the study.

Describe how data will be disposed of and when disposal will occur.

6D. *At minimum, Federal regulations require research records to be retained for at least 3 years after the completion of the research (45 CFR 46). Research that involves identifiable health information is subject to HIPAA regulations, which require records to be retained for at least 6 years after a participant has signed an authorization. Finally, funded research projects may require longer retention periods, you may need to follow the sponsoring agency guidelines.*

The Principal Investigator (Dr. Garrison-Kane) will maintain the data files, disseminate the data, store and destroy the data files upon 3-5 years after the study is completed.

7. Funding

Is this study externally funded?

7A.

For example, this research is funded by a source outside Missouri State; a federal agency, non-profit organization, etc.

Yes

✓ No

Potentially (this study is being submitted for funding, but has not yet been awarded)

Is this study internally funded?

7B.

For example, this research is funded by a source inside Missouri State; departmental funds, the Graduate College, etc.

Yes

✓ No

Potentially (this study is being submitted for funding, but has not yet been awarded)

8. HIPAA

Does your study contain protected health information (PHI)?

8A.

PHI is any information in a medical record or designated record set that can be used to identify an individual and that was created, used, or disclosed in the course of providing a a health care service, such as a diagnosis or treatment.

Yes

✓ No

9. Supporting Documentation

Human Subjects Training Certificates

9A. *Attach human subjects training certificates for all listed personnel. To access your training documents, please go to* CITI Training.

CITI Megan Boyle.pdf
CITI Wayne Mitchell.docx
CITI McKenzie Bacon.pdf
CITI Taylor Janota.png
Dr. Garrison_Kane CITI.pdf

HIPAA Training Certificates

9B. *Attach HIPAA training certificates for all listed personnel, if applicable.* To get more information about HIPAA training and/or to access your training documents, please go to HIPAA Information for Researchers.

Informed Consent Documents

9C. *Attach all copies of informed consent documents (written or verbal) that will be used for this study.*

Parent Permission Form.docxSample documents: Informed Consent Examples

Assent Documents

9D. *Attach all copies of assent documents (written or verbal) that will be used for this study.*

Sample documents: Assent Examples

9E. Recruitment Tools

Attach copies of proposed recruitment tools.

Surveys/Questionnaires/Other Social-Behavioral Measurement Tools

9F. *Attach surveys, questionnaires, and other social-behavioral measurement tools.*

Autism Social Skills Profile.pdf
Child Interview of Social Functioning.pdf
Parent Interview of Social Functioning.pdf
Duration Data Sheet.docx
Frequency Data Sheet 1.docx
Frequency Data Sheet 2.docx

Other Documents

9G. *Attach any other documents that have not been specified in previous questions, but are needed for IRB review.*

Self-Monitoring Recording Sheet.docx
Reinforcement Inventories for Children and Adults.pdf
Social Validity Outside Obser erObservation Sheet.docx
Social Validity Parent and Participant Consumer Satisfaction Surveys.docx
ASD on the Go Social Skills Curriculum PDF.pdf

10. Additional Information

10A. Would you like to add additional information?

Yes

✓ No

Renewal Submission

1 Project Status

This Renewal Request is intended to continue your previously approved study for an additional period of time, if approved. Any modifications to the research study must be submitted via a Modification Request.

1A. Indicate the current status of the research:

- Research has not yet started at any location
- Research is open to accrual of new participants (for specimen/data only research, the collection of new specimens or records is ongoing)
- Closed to accrual: accrual is temporarily on hold
- ✓ Closed to accrual: clinical interventions, surveys, or similar participant interactions are continuing.
- Closed to accrual: remaining activity is limited to collection of participant long-term follow-up data.
- Closed to accrual: remaining activities limited to analysis of data/specimens already collected.
- Other

2 General Information

Please provide a summary of your progress with this research to date, including any interim findings since the last review.

2A.

This study has 2 participants. Research has concluded for Participant 1, pending parent follow-up interviews and social validity measures. Data analysis and write-up is in progress. Participant 2 is currently in the withdrawal phase of an ABAB design. This participant had a significant delay due to health issues. We are on track to finish with Participant 2 by the end of the semester.

2B. Have there been any significant problems or issues with the research since the last review?

Yes

✓ No

Have there been any changes in the research, new risk information, or any other new information since your last review which would alter the following presumptions about the research?

2C.

- Risks to participants in this research project are minimized.
- Risks to participants are reasonable in relation the the anticipated benefits to the participant or importance of the generalizable knowledge expected as a result of this research.
- The selection of participants, specimens or data is equitable.
- Provisions for obtaining and documenting informed consent are adequate.
- Appropriate data monitoring is in place to ensure safety of participants.
- Appropriate safeguards are in place to protect participants' privacy and confidentiality.
- Appropriate safeguards are in place to protect participants who my be vulnerable to coercion or undue influence.

Yes

✓ No

2D. Have all members of the research team received and remained up-to-date on the required training on Human Subjects Protection?

Note: Any new members to the research team must be added via a Modification Request.

✓ Yes

No

Appendix C. Parent Interview of Social Functioning

Parent Interview of Social Functioning

Social Functioning

1. How many friends does your child have? If none, does he express an interest in having friends? Has he ever had friends?
   a. How many close friends?
   b. Describe their relationship
   c. Does he prefer playing with younger children rather than peers?
   d. Does he appear more comfortable interacting with adults rather than peers?
2. How does your child play with other children?
   a. Does he join in games with other children?
   b. Does he ask others to join him?
   c. Does he have trouble taking turns?
3. How does your child typically display his emotions?
   a. Are they appropriate to the situation?
   b. Does your child exhibit fear or distress regarding social interactions?
   c. Does he avoid social situations?
4. Describe his eye contact during social interactions. Does he maintain eye contact? If not, what does he look at?
5. Does your child appear argumentative when disagreeing with others?
6. Does he often say things that are "taken the wrong way" by others?

Social Communication

1. Does your child ask many questions?
   a. To request something (tangible item)?
   b. To request assistance?

c. To request information about a topic?

d. To request information about a person?

2. How would you describe the tone of your child's voice?

   a. Different from that of other children?

3. How would you describe your child's ability to engage in conversations?

   a. Are they one-sided or do they involve give and take?

   b. Does he have difficulty shifting topics in conversations?

   c. Does he initiate interactions? What do these initiations look like?

Interests

1. What are your child's interests?

   a. How often does he talk about or engage in these interests?

2. Does your child have difficulty transitioning from one activity to another?

   a. Difficulty starting a task?

   b. Difficulty finishing?

3. Does your child have any play behaviors that are different from those of other children his age? Describe.

4. Does your child have any repetitive behaviors (hand flapping, rocking, spinning, etc.)?

5. Does your child have any sensory sensitivities that interfere with social interactions (sounds, visual, tactile, smells, taste)?

Other Important Questions

1. What are your child's strengths?

2. What are your goals (short and long term) for your child?

3. What do you see as the biggest obstacle to your child establishing social relationships?

For more information on how to use this assessment tool in the context of teaching social skills, see S. Bellini, *Building Social Relationships: A Systematic Approach to Teaching Social Interaction Skills to Children and Adolescents with Autism Spectrum DIsorders and Other Social Difficulties* ©2006; AAPC Publishing; www.asperger.net

Appendix D. Child Interview of Social Functioning

Child Interview of Social Functioning

Social

1. How many friends do you have? (If child responds that he/she does not have friends, go to question 5)
2. What are their names? What grade/How old are they?
3. Please describe them?
4. What kind of things do you do with your friends? (Skip to Question 6)
5. Would you like to have friends?
6. What is a friend?
7. How are you (or how would you be) a good friend?
8. Do you ever get teased or bullied? Why? What do you do when you are teased/bullied?
9. Do people ever do things that bother you? What?
10. Do you ever do things that bother or upset others? What?

Emotional

1. What kind of things make you feel happy?
2. What kinds of things make you scared? What makes you nervous? Can you describe what scared feels like? Nervous? (Provide examples if necessary, for instance, "do your hands shake?") What do you do when you feel nervous? Does it help?
3. What kinds of things make you angry? What do you do when you feel angry? Does it help?
4. What kinds of things make you sad? What do you do when you feel sad? Does it help?
5. Do you ever feel lonely? When? What do you when you feel lonely? Does it help?
6. How do you know when someone else is (sad, happy, scared, angry, etc.)?

Interests/Routines and Stereotypical Behaviors

1. What kind of things do you like to do?
2. How much time do you spend on these interests?
3. Does it bother you when you are asked to switch from one activity to another?
4. Do any sounds bother you?
5. Does it bother you to be in a noisy, crowded room? Where do you work best?
6. What makes you different from other people? The same? (If the child engages in any stereotypical behaviors such as hand-flapping, use this answer to assess whether he is aware of the behavior, and if he/she perceives it as problematic.)

Additional Questions

1. What is your best quality? What do you like most about yourself?
2. What is your worst quality? What do you like least about yourself?
3. If you could change one thing about yourself or your life, what would it be?

Problem Identification and Problem Analysis Interview

"Problems I've got ... solutions I need!"

In addition to the general information gathering that takes place during the initial interviews, more structured interviews with primary stakeholders (parents and classroom teachers) are conducted to help direct and guide the intervention process. I hesitate to use the term "problem" when I discuss children's social skills, as I believe that we tend to focus too much of our attention on "problems." However, like it or not, it is problems that we have, and it is problems that motivate parents to seek my clinical services. To date, I have not received a single phone call from a parent saying, "Scott, everything is going great with my son, no problems at all ... can you fit him in for an appointment?" So until I receive this call, I can accept the reality that it is problems that prompt parents to seek my services, and it is solutions that they seek for their child.

For more information on how to use this assessment tool in the context of teaching social skills, see S. Bellini, *Building Social Relationships: A Systematic Approach to Teaching Social Interaction Skills to Children and Adolescents with Autism Spectrum DIsorders and Other Social Difficulties* ©2006; AAPC Publishing; www.asperger.net

Appendix E. Participant One's Self-Monitoring Sheet

Self-Monitoring Sheet

Answer Question

Add Information

Ask a Question

Tally:

Adapted from Koegel, Park, and Koegel (2014)

Appendix F. Participant Two's Self-Monitoring Sheet

Self-Monitoring Sheet

Answer Question

Add Information

Ask a Question

Tally:

Adapted from Koegel, Park, and Koegel (2014)

Appendix G. Participant Goal Tracking Sheet

Goal Tracking Sheet

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Date: __________ Goal: ______ Actual Number of Tallies: ____________ Goal Met? Yes No

Appendix H. Verbal Component Frequency Data Form

Frequency Data Recording Sheet

Date:	Session #:	Phase:
Participant:	Observer:	
Setting:	Extraneous Factors:	

Operational Definitions:

Initial Reciprocal Response (IR): Answering the question or making an on-topic comment.

Elaboration of Response (ER): Providing an on-topic response to the conversational partner's initial question and expanding on the response by adding relevant, on-topic information.

Reciprocal Question-asking (RQA): Asking a question to the conversational partner that was related to their preceding response or to the conversational partner's initial question.

Conversation Interruption (CI): directing a vocalization of 5 or more seconds in duration toward the conversational partner before they have completed their turn (asked a question).

Frequency	Initial Response	Elaboration of Response	Reciprocal Question-asking
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

Frequency	Initial Response	Elaboration of Response	Reciprocal Question-asking
26			
27			
28			
29			
30			
31			
32			
33			
34			
35			
36			
37			
38			
39			
40			
41			
42			
42			
44			
45			
46			
47			
48			
49			
50			

Totals

IR: _____

ER: _____

RQA: _____

CI: _____

Reliability

Agreements:

_____

Disagreements:

_____

Reliability:

%IOA

Appendix I. Non-Verbal Component Rating Scale

Non-Verbal Rating Scales

Dimension	Description	Ratings
Facial Expression	The participant nonverbally acknowledges the emotion of the conversation partner based on his/her facial expression (ex; the participant smiles in return when the conversation partner smiles). (Laushey, Heflin, Shippen, Alberto, & Fredrick, 2009)	1 = no appropriate facial expression exhibited (i.e., inappropriate to context/neutral) 2 = appropriate facial expressions are exhibited less than half of the time 3 = appropriate facial expressions are exhibited over half of the time 4 = most facial expressions are appropriate to topic 5 = all facial expressions are appropriate to topic, and vary widely
Eye Contact	The participant's face and body are oriented towards the conversational partner. The participant's eyes are oriented towards the conversational partner for 3-5 seconds at a time, and the participant's eyes never look away from the face of the partner for more than 10 continuous seconds at any time during the interaction. (Dotson, Leaf, Sheldon, & Sherman, 2010)	1 = no eye contact is made 2 = brief eye contact is made (1-2 seconds at a time) 3 = eye contact is made, but individual frequently (3 or more times) spends over 10 seconds gazing elsewhere or maintains eye-contact for over 5 seconds 4 = eye contact is made, but individual occasionally (1-2 times) spends over 10 seconds gazing elsewhere or maintains eye-contact for over 5 seconds 5 = eye contact is appropriate for duration of conversation
Posture	The participant maintains an erect and relaxed posture during the entire interaction. The participant does not engage in any distracting behaviors such as rocking, tapping feet, repetitive hand flapping, excessive fidgeting, repetitive manipulation of objects (e.g. twisting or spinning a pencil or paper clip), etc. (Dotson, Leaf, Sheldon, & Sherman, 2010)	1 = posture is inappropriate and/or distracting behaviors occur for entire duration of conversation 2 = frequent lapses in posture and/or frequent distracting behaviors 3 = occasional lapses in posture and/or short bouts of distracting behaviors 4 = very few lapses in posture or bouts of distracting behaviors 5 = posture and behaviors are socially appropriate for duration of conversation

Facial Expression:_____ Eye Contact:_____ Posture:_____

Appendix J. Pre-Intervention Parent Survey

Dear Parent,

Thank you for your support and participation in this social skills intervention. As you are aware, your child has been selected to be a participant in a social skills study for my thesis project, as part of my coursework for a Master's in Special Education. Please complete the survey below to help me get a better understanding of your child's current social skills from your perspective. Information received from this survey will be used strictly to compare the students' social skills from a pre-intervention to post-intervention viewpoint.

Please feel free to discuss any questions or concerns with me at your convenience. Thank you again for your support.

Sincerely,
McKenzie Bacon

How often does your child…	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
Answer when someone asks them a question	1	2	3	4	5
Add relevant information when answering questions	1	2	3	4	5
Ask someone an on-topic question to keep the conversation going	1	2	3	4	5
Make eye contact while talking to others	1	2	3	4	5
Use appropriate facial expressions during conversation	1	2	3	4	5

Appendix K. Post-Intervention Parent Survey

Dear Parent,

Thank you for your support and participation in this social skills intervention. As you are aware, your child has participated in a social skills study for my thesis project, as part of my coursework for a Master's in Special Education. Please complete the survey below to help me get a better understanding of your child's current social skills from your perspective. Information received from this survey will be used strictly to compare the students' social skills from a pre-intervention to post-intervention viewpoint.

Please feel free to discuss any questions or concerns with me at your convenience. Thank you again for your support.

Sincerely,
McKenzie Bacon

How often does your child…	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
Answer when someone asks them a question	1	2	3	4	5
Add relevant information when answering questions	1	2	3	4	5
Ask someone an on-topic question to keep the conversation going	1	2	3	4	5
Make eye contact while talking to others	1	2	3	4	5
Use appropriate facial expressions during conversation	1	2	3	4	5

Rate how much you agree with the following statements	**Strongly Disagree**	**Somewhat Disagree**	**Neither Agree or Disagree**	**Somewhat Agree**	**Strongly Agree**
I believe my child's social skills have improved since beginning this intervention.	1	2	3	4	5
I am happy with the results of this intervention.	1	2	3	4	5
I will continue using the methods utilized in this intervention.	1	2	3	4	5
I would recommend this intervention to others.	1	2	3	4	5

Additional Comments:

Appendix L. Pre-Intervention Participant Survey

Rate how much you agree with the followings statements	Strongly Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Strongly Agree
I answer when someone asks me a question.	1	2	3	4	5
I give enough details when answering questions.	1	2	3	4	5
I ask others on-topic questions to keep conversations going.	1	2	3	4	5
I make eye contact while talking with others.	1	2	3	4	5
I use appropriate facial expressions when talking with others.	1	2	3	4	5

Appendix M. Post-Intervention Participant Survey

Rate how much you agree with the followings statements	Strongly Disagree	Somewhat Disagree	Neither Agree or Disagree	Somewhat Agree	Strongly Agree
I answer when someone asks me a question.	1	2	3	4	5
I give enough details when answering questions.	1	2	3	4	5
I ask others on-topic questions to keep conversations going.	1	2	3	4	5
I make eye contact while talking with others.	1	2	3	4	5
I use appropriate facial expressions when talking with others.	1	2	3	4	5

Rate how much you agree with the followings statements	**Strongly Disagree**	**Somewhat Disagree**	**Neither Agree or Disagree**	**Somewhat Agree**	**Strongly Agree**
I think self-monitoring helps me have better conversations.	1	2	3	4	5
I think ASD on the Go helped me learn how to have better conversations.	1	2	3	4	5
I enjoy using self-monitoring when having conversations.	1	2	3	4	5
I will keep using self-monitoring when having conversations.	1	2	3	4	5
I would recommend using self-monitoring to a friend who wants to have better conversations.	1	2	3	4	5

Additional Comments:

Appendix N. Fidelity of Treatment Checklist

Conversation Session Fidelity			
1. Therapist hangs verbal and non-verbal posters in view of participant.	**Y**	**N**	**N/A**
2. Therapist seats participant so that facial expressions, posture, and eye contact can be viewed by the camera.	**Y**	**N**	**N/A**
3. Therapist provides participant with their tally sheet and a dry erase marker.	**Y**	**N**	**N/A**
4. Therapist assists participant in setting a goal for the session using the goal sheet.	**Y**	**N**	**N/A**
5. Therapist asks question related to current affairs or ongoing topic of discussion (ex; "Did you see the rain earlier?")	**Y**	**N**	**N/A**
6. A 10-min timer is begun as the therapist finishes asking their first question of the session.	**Y**	**N**	**N/A**
7. Therapist allows 5-s for participant to answer question • *If NO answer* within 5-s, therapist asks a new question	**Y**	**N**	**N/A**
8. If participant answers therapist's question, therapist waits up to 5-s after they stop speaking for them to elaborate and/or ask a reciprocal question.	**Y**	**N**	**N/A**
9. If participant *does not* elaborate and/or ask reciprocal question within 5-s, therapist asks a new question	**Y**	**N**	**N/A**
10. *If participant asks a reciprocal question,* therapist: 1. Answers, 2. Elaborates, and 3. Asks an on-topic reciprocal question	**Y**	**N**	**N/A**
11. In case of a conversation interruption: therapist allows child to interrupt for at least 5-s in order to meet definition of conversation interruption. After 5-s, therapist can ask another question if child pauses at least 2-s. ***A question asked for clarification or further information about the conversation partner's response does not count as a conversation interruption.	**Y**	**N**	**N/A**
12. After the 10-min session has ended, therapist and participant review whether the goal has been met.	**Y**	**N**	**N/A**
ASD on the Go Module Training Fidelity			
1. Therapist provides client with computer showing correct ASD on the Go module (follows predetermined order of modules)	**Y**	**N**	**N/A**
2. Therapist tells participant what module they will be completing.	**Y**	**N**	**N/A**
3. Therapist provides associated worksheet and pencil to client.	**Y**	**N**	**N/A**
4. Therapist prompts client to begin clicking through module.	**Y**	**N**	**N/A**
5. Therapist answers any questions and/or provides technical assistance when necessary.	**Y**	**N**	**N/A**
6. Therapist provides guidance and direct instruction when necessary as participant completes module worksheet.	**Y**	**N**	**N/A**
7. After module is completed, therapist directs participant to take the associated module quiz independently.	**Y**	**N**	**N/A**
8. Therapist discusses any missed quiz questions with client.	**Y**	**N**	**N/A**
_____ / _____ = _____._____ x 100 = _____% # Y's (20 - # N/A's)			