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Analysis of Instructional Activities on the Acquisition of Social Skills

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By

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The purpose of this study was to determine which of 3 instructional activities, when combined with behavioral skills training (BST) was the most effective at eliciting prosocial behaviors, decreasing maladaptive behaviors, and increasing the occurrence of a target social skill. Additionally, this study sought to determine if this model of group intervention (combining BST with various activities) was an effective approach at addressing social skills deficits of elementary-aged children. Four children, ages 6 to 8 years old, participated in this study, which took place at a university-based school psychology services clinic in the Southeastern United States. Overall, results of this study were variable in that different instructional activities impacted dependent variables in different ways for each participant. When comparing the 3 instructional activities, there were minimal differences in the impact each had on the display of prosocial and maladaptive behaviors. However, parents of the participants in this study reported that this social skills intervention was acceptable and beneficial at addressing social skill deficits in children. Similarly, the participants themselves reported that they liked coming to the group, made new friends in this group, and that they would be happy if they could keep coming to this group. Overall, the findings of this study revealed implications about

the inclusion of activities into group social skill intervention sessions as well as the utility of this model of group intervention delivery. Limitations to this study as well as recommendations for future research in this area are discussed.

DEDICATION

I would like to dedicate this dissertation to the children and families I have worked with, learned from, and been inspired by. Each of those children and their families helped me to clarify and shape my purpose as a psychologist, positively impacting my life more than they realize.

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CHAPTER I

INTRODUCTION

Social skills are described as the set of behaviors that allow children to engage in meaningful interactions and create appropriate relationships with peers (Sheridan, 2000). While social skills are inherently necessary to form and maintain social relationships, the importance of having appropriate, meaningful social skills extends well beyond the context of friendship. In fact, individuals who have the ability to engage in appropriate social behaviors are likely to perform well in school (Leaf et al., 2009), have less mental health concerns across the lifespan (Francis, McMullen, Blue-Banning, & Haines, 2013), display higher communication and language skills (Kransy, Williams, Provencal, & Ozonoff, 2003), and enjoy an overall greater quality of life as an adult (Laugeson, Gantman, Kapp, Orenski, & Ellingsen, 2015) than those who lack the skills or motivation to engage in socially appropriate ways. The development of social skills in childhood has a significant impact on the trajectory of social skills development into adolescence and adulthood, particularly for individuals with a developmental disability or other psychological diagnosis (Kornacki, Ringdahl, Sjostrom, & Nuerenberger, 2013). While social skills deficits can be seen across a wide span of individuals (Balderson & Sharpe, 2005; Gresham, Sugai, & Horner, 2001; Kang et al., 2011), individuals with Autism Spectrum Disorder (ASD) and Attention Deficit-Hyperactivity Disorder (ADHD) are most likely to present with social difficulties (Camargo et al., 2014; Staikova, Gomes,

Tartter, McCabe, & Halperin, 2013). When considering that, as of 2011, approximately 11% of children ages 4-17 had been diagnosed with ADHD (Center for Disease Control and Prevention, 2011) and as of 2015, 1 in 68 children were diagnosed with ASD, researchers and practitioners alike can agree that there are a substantial amount of children in need of social skills interventions.

Evidence-Based Interventions to Address Social Skill Deficits

While there is an expansive research base of evidence-based interventions addressing social skills deficits in these populations, treatments rooted in applied behavioral principles are the most frequently used (Reichow & Volkmar, 2010). More specifically, the use of behavioral skills training (BST), peer-mediated instruction, and play-based interventions are frequently discussed in the social skills literature (Chung at al., 2007; Kornacki et al., 2013; Kroeger, Schultz, & Newsome, 2007). However, these activities or combinations of BST and various activities (e.g., play-based interventions) have not been paired together in any combination and specifically examined for effectiveness. While the social skills literature is comprehensive and has demonstrated effective methods for teaching social skills to children, there is less research available that directs practitioners in how to organize and implement activities in social skills groups after the direct instruction of the lesson is complete. While pre-packaged social skills interventions are available for practitioners' use, this curriculum may not be created using evidence-based strategies. Further, and in most cases, the entire curriculum itself (as a package) has not been evaluated for effectiveness in a controlled study, which is a concern. Therefore, if practitioners do not have the resources or the access to pre-packaged curriculums (assuming those being used are evidence-based), they are

designing and structuring social skills groups independently with little direction from the literature. Aside from teaching the skills using BST, the literature provides little to no comprehensive guidance as to what other activities should be incorporated into social skills groups and how to implement these appropriately.

Statement of the Problem and Significance of the Study

Children with social skills deficits are likely to be impacted not only socially, but emotionally, academically, and psychologically, if intervention does not take place to teach appropriate social behaviors (Bellini, Peters, Benner, & Hopf, 2007). While there is no shortage of literature regarding effective methods to increase the display of appropriate social behaviors among children with social skills deficits, there is, however, a gap in the literature explaining what specific types of instructional activities are most effective at eliciting these appropriate social behaviors (Jung & Sainato, 2013). Should practitioners select additional activities they incorporate into social skills sessions more deliberately? Further, should interventions in social skills provide opportunities for the development of social skills through play activities? Current literature has compared direct social skills interventions with the implementation of play-based, natural occurring situations that are used to shape social behaviors (Kroeger et al., 2007). However, to date, no study has combined the two elements (direct instruction and play/activity-based activities) together into one intervention and determined effectiveness. The purpose of the current study is to determine if direct instruction of social skills combined with one of three instructional activity methods will be effective at eliciting appropriate social behaviors of elementary-aged children (ages 6-8 years). Further, the researcher intends to

determine if any one of the three instructional activity methods will be more effective than the others at eliciting these appropriate social behaviors.

Findings from this study could provide practitioners with some direction in the selection of additional activities to incorporate into their social skills intervention sessions. Currently, practitioners either select pre-packaged social skills curriculum for implementation or use basic behavioral skills training procedures to teach social skills and then fill in the remaining time in the session by seemingly haphazardly selecting other activities for the group to participate in. This study could also provide practitioners with some evidence to support their decisions of activity selections. Further, this study will also provide evidence for a new model of social skills instruction in a group setting, and contribute to the existing body of literature on evidence-based social skills intervention.

Research Questions

This study seeks to answer the following research questions.

Research Question #1: Does a combination of direct instruction, behavioral skills training, and the opportunity to engage in an instructional activity lead to an increase in prosocial behaviors?

Research Question #2: Which of the three instructional activities (craft, team-based, structured play) is most effective at eliciting prosocial behaviors?

Research Question #3: Does a combination of direct instruction, behavioral skills training, and the opportunity to engage in an instructional activity lead to a decrease in maladaptive behaviors of children with social skill deficits in a free-play setting?

Research Question #4: Which of the three instructional activities (craft, team-based, structured play) is most effective at decreasing maladaptive behaviors?

Research Question #5: Which of the three instructional activities (craft, team-based, structured play) is most effective at increasing the frequency at which participants initiate a conversation during a free-play setting?

CHAPTER II

LITERATURE REVIEW

Defining Social Skills

Social skills are imperative for successful life functioning, as social relationships and social interactions are necessary for individuals to operate in society. Social skills describe the set of behaviors that allow us to respond appropriately to other individuals and to our environments, to successfully manage conflict, and to build interpersonal relationships with others. Defining social skills is a complicated task, as social skills include a wide variety of behaviors and combinations of behaviors, thus several definitions of social skills are present throughout the literature. According to Elliott and Gresham (1991), social skills refer to the set of competencies that facilitate positive interactions between an individual and his/her environment. Sheridan (2000) describes social skills as the behaviors that children must engage in to play appropriately and create relationships with others.

Despite the variations, it appears that throughout the literature, there are three primary definitions of social skills: (a) the peer acceptance definition, (b) the behavioral definition, and (c) the social validity definition (Gresham, 1983; 1984; 1986). The peer acceptance definition describes a child's social skills in terms of his/her interactions with peers and the peers' evaluation and perception of these interactions as positive and favorable (Asher & Hymel, 1981; Dodge, 1983; Howes, 1987). Behaviorally, social skills

are defined as responses that are either increased by positive reinforcement or decreased by punishers (Bellack, 1979; Strain, 1977). From a social validity perspective, social skills can be defined as behaviors that facilitate social interactions and are perceived as pleasing to others (Gresham & Elliott, 1984). Social competence, another domain of social skills, refers to the ability of children to understand their social environment and create and engage in an appropriate response to fit the current situation while utilizing the response to gain positive reinforcement and acceptance from others in the current social environment (Waters & Sroufe, 1983). For the purposes of the current study, social skills will be defined as a collective set of behaviors that serve to promote socially appropriate and positive interactions with others in order to create or maintain reciprocal relationships. While the definitions of social skills may very slightly, the importance of a child's ability to engage in appropriate social behaviors is something that is consistent across time and literature.

Importance of Social Skills

While it is important to consider the impact and importance of social skills across the lifespan, it is crucial to monitor and intervene on social skills deficits particularly among children. Research has repeatedly confirmed that social skills are critical for successful cognitive, social, and emotional development of children (Bellini et al., 2007). In a school setting, children gain critical skills for appropriate development and learning through the use of peer interaction and appropriate play (Jung & Sainato, 2013). Research has also demonstrated that children who create meaningful friendships are more likely to display appropriate social skills, perform better in school, have higher social cognition

skills, and engage in less aggressive behaviors than children who lack meaningful social relationships (Leaf et al., 2009).

On the other hand, deficits in social skills can lead to social exclusion, inappropriate or problem behaviors, academic difficulties, and even depression (Francis et al., 2013). When children lacking social skills engage in problem behaviors as a means for social interaction with peers instead of appropriate social behaviors, future success of those children's social skills development is at-risk for being compromised (Camargo et al., 2014). This can easily compromise the child's ability to form meaningful relationships with their peers, which contributes to even more global deficits, as research has shown that peer relationships not only increase social competence, but also lead to increased communication and language abilities (Kransy et al., 2003).

Populations Impacted by Social Skill Deficits

Social skills deficits can be present across the lifespan, across all races, genders, cultures, and among individuals with varying levels of psychological, behavioral, and developmental functioning. Research on social skills has provided evidence for effectiveness of interventions to address skill and performance deficits among this wide variety of individuals, from typically developing children (Balderson & Sharpe, 2005), to children with emotional behavior problems (Gresham et al., 2001), to adolescents with ADHD (Staikova et al., 2013), to preschoolers with ASD (Gena, Couloura, & Kymissis, 2005), to adults with severe psychological problems (Hersen, Turner, Edelstein, & Pinkston, 1975), and even to children with low incidence disabilities, such as Cerebral Palsy (Kang et al., 2011) and deaf-blindness (Jacobsen, Bjerkan, & Sorlie, 2009). Although a review of the literature addresses social skills deficits among all of these

populations, social skills interventions have been most effective and appear more often in the research when applied to children and adolescents with ASD and ADHD (Reichow & Volkmar, 2010).

Autism Spectrum Disorder

ASD is a developmental disorder characterized by persistent deficits in social communication and social interaction across multiple settings, restricted, repetitive patterns of behavior, interests, or activities resulting in stereotypical or repetitive motor movements, and insistence on sameness and ritualized patterns of behavior (American Psychiatric Association, 2013). Impairments in social functioning have been recognized as the most prevalent deficit among individuals with ASD and should take priority for clinicians when providing treatment (Carter, Davis, Klin, & Volkmar, 2005; Weiss & Harris, 2001). Children with ASD experience difficulty initiating, responding, and maintaining social interactions, making eye contact with others, sharing objects with others, engaging in appropriate play with others, and responding to the feelings of others (Hart & Whalon, 2008). Social skills deficits among this population serve to exacerbate the severity of the disability while also creating a higher risk for additional challenges, such as poor academic achievement, peer rejection, anxiety, depression, substance abuse, and other more severe forms of psychopathology (Bellini, 2006; LaGreca & Lopez, 1998; Tantam, 2000).

Attention-Deficit/Hyperactivity Disorder (ADHD)

ADHD is characterized by excessive hyperactivity and significant levels of inattention and impulsivity (Schweitzer, Cummins, & Kant, 2001). Individuals with

ADHD typically face a range of additional challenges as a result of this diagnosis. Children, in particular, are faced with academic challenges, difficulties with aggression, and significant social problems (Barkley, 1997). In fact, social problems are estimated to occur among 52%-82% of children with ADHD (Staikova et al., 2013). Common social skills deficits include not listening to others, interrupting, not taking turns in conversation or play, and not following rules (Cervantes et al., 2013; Staikova et al., 2013). As a result of poor social skills, children with ADHD are often rejected by peers, placing them at risk for future development of psychopathology, problem behaviors, aggression, and lower academic achievement (Greene, Biederman, Farone, Sienna, & Garcia-Jetton, 1997; Klein & Mannuzza, 1991; Mikami & Hinshaw, 2006; Poon, 2012).

Theoretical Framework for Conceptualizing Social Skills Deficits

Theoretical orientation shapes the way atypical behavior is defined and attributes psychopathology or skill deficits to different origins. Social skills deficits that create a need for intervention can be explained differently depending on the theoretical orientation selected. However, some of these theories are more applicable and more frequently mentioned throughout the literature than others. In fact, the majority of the literature providing evidence for effective social skills interventions is rooted in Behavioral theory.

Behavioral Theory

Perhaps the theory that has shaped social skills intervention more than any other theory is Behavioral Theory. Comprehensive literature reviews and meta-analyses of social skill interventions have concluded that those rooted in behavioral theory are not

only the most frequently published, but are also found to be the most effective, particularly for children with developmental disabilities and behavioral disorders (Camargo et al., 2014; Reichow & Volkmar, 2010). Original founders of behaviorism, such as John B. Watson, believed that psychology should no longer be concerned primarily with the mentalism of humans but should instead be focused on the behavior of humans, as behavior is observable and mental acts are not (Watson, 1913). Advancing the work of Watson, B.F. Skinner's operant conditioning studies concluded that an animal's behavior can be strengthened or weakened by manipulating antecedent events that happened before the behavior and consequences that occur after the behavior (Moore, 2011). Similar to Skinner's work with operant conditioning, E.L. Thorndike's establishment of the Law of Effect was instrumental to the creation of today's modern behaviorism (Thorndike, 1927). The Law of Effect states that a behavior followed by a favorable, pleasant consequence is more likely to happen in the future; whereas, a behavior followed by an unpleasant or aversive consequence is less likely to happen again in the future (Catania, 1999). Applying these basic behavioral principles to intervention as treatment for individuals is what contributed to the creation of applied behavioral analysis (ABA). ABA is a science focused on modifying observable, measurable, behaviors that are environmentally significant to an individual by analyzing the functional purpose of the behavior through the identification of antecedent triggers and the consequence that perpetuates the behavior (Leaf et al., 2016). When considering social skills interventions, a behavioral theorist would seek to decrease inappropriate social behaviors while increasing appropriate social behaviors. Specific reinforcers would be put in place to reinforce the display of appropriate social behavior and increase the

likelihood of it occurring again in the future. The literature reviewed below presents studies that are primarily based on behavioral theory and incorporate intervention components that are behavioral in nature.

Evidence-Based Social Skills Interventions

Based on the nature of the complexity of social skills and the significant negative outcomes that can occur if social skills deficits are not remediated, research on the interventions targeting social skills deficits are plentiful. When reviewing evidence-based interventions for increasing social skills, the most effective interventions are rooted in cognitive, behavioral and social learning theory, more specifically, methods and interventions utilizing applied behavioral principles are the most common interventions delivered to increase social skills (Reichow & Volkmar, 2010). Research on specific behavioral interventions has demonstrated that discrete trial training, pivotal response training, role-play, modeling, performance feedback, direct instruction, peer mediated instruction, and group social skills instruction are effective (Gray & Garand, 1993; Kroeger et al., 2007; Radley, Ford, Battaglia, & McHugh, 2014; Radley, Jenson, Clark, Hood, & Nicholas, 2014; Sansosti, 2010). While it is important to recognize and be familiar with a variety of evidence-based interventions that can be applied to children with social skills deficits, this paper will elaborate and present literature on three types of interventions: BST, peer mediated and instruction, and play-based interventions. BST and peer mediated interventions are both the most common interventions used to treat social skills deficits in children and adolescents (Camargo et al., 2014). Play-based interventions, utilizing different play activities as components to induce behavioral change, is a fairly recent approach to increasing specific social skills among children with

disabilities, and is an area of research in need of expansion. In the following section, an overview of BST and peer-mediated interventions will be provided, followed by coverage of play-based interventions within social skills training.

Behavioral Skills Training (BST)

BST is an intervention that utilizes a package of behaviorally based actions used to discretely teach skills to individuals. BST combines direct instruction (breaking the skill down into steps that are taught in succession), modeling (watching others engage in the skill), rehearsal (practicing the skill), feedback (description of how well the skill was performed), role-play (applying the skill to a scenario and acting out the scenario with others), and reinforcement to increase target behaviors (Kornacki et al., 2013).

Kornacki et al. (2013) implemented BST with three young adults (one with ASD, one with Down Syndrome, and one with an intellectual disability) to determine if any specific components of BST were more effective at increasing conversation skills. Results indicated that each participant required a different combination of the components of BST to improve their conversational skills and that a single component of the intervention was not responsible for skill acquisition. Further, researchers indicated that it was more efficient to implement the complete BST package than to attempt to identify specific components of BST that would be effective for an individual (Kornacki et al., 2013).

BST was also found to be effective at increasing appropriate social behavior and mastering targeted social skills among 24 children (ages 8-18 years) with ASD and co-morbid diagnoses of Disruptive Behavior Disorder (DBD), Oppositional Defiant Disorder (ODD), and ADHD (Matthews, Erkfritz-Gay, Knight, Mancaster, & Kupzyk, 2013). BST

was conducted in a group setting for 1 hour each week across 8 weeks; skills targeted included eye contact, tone of voice, sharing ideas, self-control, complimenting, and offering help to others (Mathews et al., 2013). Overall, authors commented that the repeated opportunities to practice the skills and receive feedback from group facilitators contributed to skill acquisition and observed application of the skills in direct observations (Mathews et al., 2013).

Likewise, using BST was found to be effective at increasing appropriate display of targeted social skills of five children with ASD, between the ages of 4 and 6 years (Leaf et al., 2010). Participants were placed in a social skills group and received direct instruction of the skill, observed group facilitators modeling the skill, were required to role-play the skill, and then received feedback on their performance. Positive social praise and tickets were given as part of the token economy for correct role-play of the behavior. Overall, all participants were observed to correctly engage in the skills taught (e.g., showing appreciation, giving compliments, making empathetic statements, changing the game) at a mastery level and four out of five participants maintained the skills at follow-up eight weeks later; additionally, four of the five participants were observed to independently generalize their skills to a new classroom (Leaf, Dotson, Oppenheim, Sheldon, & Sherman, 2010). Overall, the studies presented provide a sampling of the evidentiary support for the use of BST at increasing social skills for individuals ages 4-18 years old with various diagnoses.

Peer Mediated Instruction

Establishing and maintaining positive peer relationships is critical for a child's academic, emotional, and psychological success (Ladd, 1990; McClelland, Morrison, &

Holmes, 2000; Oden & Asher, 1977). When children lack social skills, this impedes their ability to positively interact with peers, which makes it difficult to form friendships (Kransy et al., 2003). Creating opportunities for children with social skills deficits to have positive interactions with peers serves as positive reinforcement for the appropriate social behavior, which in turn, increases the likelihood that those appropriate social behaviors will occur in the future. Although the majority of evidence-based social skills interventions are centered around teaching skills to those with the deficits, research has demonstrated that incorporating typically developing peers into interventions can be equally effective (Goldstein, Schneider, & Theimann, 2007; Lord et al., 2001; Rogers, 2000). A meta-analysis of social skills interventions indicated immense support for the inclusion of peers into intervention for both preschool and school age children with social skill deficits (Reichow & Volkmar, 2010). Literature included in this review demonstrated support for the use of an initial peer training to teach typically developing students to respond to social behaviors of their atypical peers using BST techniques prior to the implementation of a combined social skills group (Theimann & Goldstein, 2004). Results indicated that the number of interactions observed during a free-play session outside of treatment increased more significantly when typically developing peers had been trained prior to the start of the mixed group intervention. Other studies incorporated into the meta-analysis indicated that training peers in prompting procedures was also effective at increasing interaction and initiation of social behaviors (e.g., Garfinkle & Schwartz, 2002; Liber, Frea, & Symon, 2008).

One study in particular utilized typically developing peers in a targeted fashion to increase social skills of selected individuals. Four children with ASD (ages 6-7 years)

were placed in a social skills group with four typically developing peers; the group met for 1-hour each week across 11 weeks and included lessons on 11 different social skills (Chung et al., 2007). During baseline and before each group session, the typically developing peers met with group facilitators and the skill for that session was presented to them along with demonstrations of how to prompt the other children to engage in the skill, and how to provide praise to peers for engaging in the skill (Chung et al., 2007). Direct observations of target students' behavior revealed that this model of social skills intervention delivery successfully increased appropriate talking, elaborated responses, and appropriate phrases of all participants, while decreasing inappropriate talking in all but one participant. This suggests that implementing peer-mediated social skills groups are effective at increasing appropriate social behaviors in school age children with ASD. However, a limitation to this particular study is the lack of a control group and thus the inability to compare treatment effects across two groups receiving similar interventions with and without trained peers.

Addressing this limitation, Kasari, Rotheram-Fuller, Locke, and Gulsrud (2012) compared effects of a peer-mediated intervention (PEER) and a child-assisted intervention (CHILD) at increasing social interactions, teacher ratings of social skills, and social network ratings of 60 children with high functioning ASD. The CHILD intervention incorporated one-on-one direct instruction of individualized social skills selected particularly for the child. Skills were broken down into steps and taught using modeling, role-play opportunities, and feedback to the child upon their engagement in the skill. The PEER intervention was implemented in a group format; each group consisted of three typically developing peers who were in the same class as the target student. The

purpose of these sessions was to provide strategies on how to increase the amount and quality of interactions with children in their class who typically played alone. Students were instructed on how to extend social support to those peers using BST. Findings indicated that students with ASD who received intervention either directly though the CHILD intervention or indirectly though the PEER intervention experienced a significant increase in their social network salience scores. Even more of an increase was seen for those whose peers participated in the PEER intervention as well (Kasari et al., 2012). At follow-up, 12 weeks after the intervention, participants in the CHILD group who also had peers in their classroom that participated in the PEER intervention had significantly higher social network salience scores when compared to children who only received the CHILD intervention. However, these scores were not significantly different than the scores of target students who only received intervention indirectly through their peers' participation in the PEERS intervention (Kasari et al., 2012). Interestingly, only target students receiving intervention indirectly from the PEER intervention alone experienced an increase in teacher ratings of their social skills. Overall, these findings suggest that incorporating a peer mediated intervention into a traditional social skills intervention increases effectiveness while also enhancing peer perception of target students. Further, peer-mediated interventions facilitated more global social involvement than child-mediated interventions did (Kasari et al., 2012).

Play-Based Interventions

An intervention that is yet to be considered evidence-based and that has not been investigated as critically as other intervention options is the use of various instructional, play-based activities to teach social skills. Observing children in play situations is

frequently how researchers collect data on intervention effectiveness, thus it is the context into which generalization of social skills instruction should be occurring (Jung & Sainato, 2013). Ironically, there are only a handful of published studies that assess intervention of play skills as a means to increase appropriate social behaviors (Jung & Sainato, 2013). Research has repeatedly demonstrated that play can be used to encourage and promote a child's global development and learning (Lantz, Nelson, & Loftin, 2004; Stagnitti, 2009; Wolfberg & Schuler, 1993). However, despite the fact that social skills intervention groups often incorporate additional play activities (e.g., crafts, games, team activities) into the group session time, no research has been published that shows support for any one of these specific type of instructional activities. Thus, the addition of play activities combined with direct instruction of social skills has yet to be explored in the literature.

Structured Play Interventions. A review of the literature on teaching play skills to children with ASD identified only one study that investigated the impact of modeling procedures on cooperative play situations (Jahr, Eldevik, & Eikeseth, 2000). Results of that study indicated that the six participants (ages 4-12 years), were not able to successfully learn the behaviors by observing, but that the observation had to be paired with behavioral descriptions and more directed instruction of the behavior in order to be learned; further, authors reported that play skills, when delivered in a context of cooperative play with instruction, did generalize across more than one setting (Jahr et al., 2000).

A second study, conducted by Lifter, Ellis, Cannon, and Anderson (2005) examined the effectiveness of prompting procedures on increasing appropriate play

behaviors of three preschool children with developmental disabilities. Children were allowed to engage in play activities at their discretion and received positive social reinforcement upon the occurrence of targeted socially appropriate behaviors; results indicated that all participants successfully learned and engaged in the target behaviors (Lifter et al., 2005).

Jung and Sainato (2013) stated, based on their interpretation and collection of literature, that children with ASD respond to direct intervention in the context of play when presented within a structured environment. Further, teaching these play skills and reinforcing appropriate social behaviors within play activities may increase generalization of skills to other children and other settings since children are provided with more realistic opportunities to practice the skills being taught (Liber et al., 2008). Current publications suggests that future studies should seek to determine which play skills should be identified and taught, and by what type of instructional strategy these skills should be taught; thus clearly identifying a gap in the literature (Jung & Sainato, 2013).

Team-Based Activities. LeGoff (2004) launched a line of research on incorporating LEGO® as an intervention for increasing appropriate social behaviors. Based on Attwood's (1998) recommendations to incorporate a constructive application of children's naturally preferred interests into intervention for children with developmental disabilities, LeGoff created a social skills group intervention based around children's interest of LEGO®. Seven groups, each with seven participants between the ages of 6 and 16 years old were the focus of this study. Each participant received 60 minutes of an individual session with a clinician in which they built their own LEGO® project across 12

weeks. Additionally, each participant attended the group LEGO® session each week. In the group session, children were presented with new LEGO® sets and assigned specific roles within the team so that some participants gave instructions for building the structure, others retrieved correct pieces and others actually built the structure (LeGoff, 2004). This team-based approach facilitated interactions such as taking turns, initiating communication, listening to others, making conversation, and effective communication- all appropriate social skills that are often taught in social skills group intervention (LeGoff, 2004). Results indicated that when compared to a control group receiving no intervention, participants demonstrated improvements in initiation of social contact, increased duration of social interactions, as well as decreased scores of social impairment on social behavior rating scales (LeGoff, 2004). Incorporating team-based play provides children with opportunities to communicate, work together, and apply social skills to achieve a common goal.

Following the publication of the LEGO® intervention, a follow-up study was conducted to compare treatment effects of a collaborative, team-based activity approach to a packaged social skills intervention, Social Use of Language Program (SULP) that involved stories about characters experiencing social skill deficits, use of adult modeling, role-play, and games related to the story (Owens, Granader, Humphrey, & Baron-Cohen, 2008). Participants in this study included 31 children, ages 6-11 years old, who received one hour of intervention weekly (either the LEGO® group intervention or the SULP group intervention) across 18 weeks. Researchers concluded that while both treatment groups experienced an increase in appropriate social behavior and a decrease in maladaptive behavior, participants in the LEGO® intervention group experienced an

increase in the duration of social interactions during free-play and a significant decrease in autism-related behaviors, where as participants in the SULP treatment group did not (Owens et al., 2008). Further, participants in the LEGO® group demonstrated a more significant decrease in maladaptive behavior than those in the SULP group. The primary difference between these interventions was the application of a collaborative, constructive activity;-thus, it is possible that the use of this type of instructional activity may be more effective than games or other activities at increasing appropriate social behaviors.

Craft Activities. While there is no literature in the behavioral intervention research about social skills that has specifically examined the impact of art activities on social skills of children, clinically there is a high presence of art or craft activities being incorporated into social skills intervention groups as additional activities to support or reinforce the lesson that was taught. While clinicians in both the school and clinic setting incorporate these types of activities, the field remains unclear on the impact of these activities. However, when searching through the art therapy body of research, there have been several studies that have found support for the use of art activities in various capacities. One such study explored the effectiveness of art therapy in combination with cognitive behavior therapy at increasing social skills in adolescence with ASD (Epp, 2008). Results indicated significant, positive changes in participants' internalizing and problem behaviors, but outcomes on social skills were less promising, as only one targeted social skill, assertion, was observed to increase (Epp, 2008). A second study found that providing a preschool-age child with one-on-one art instruction and activities prior to large group instruction increased his on-task behavior during that large group

instruction (Kuo & Plavnick, 2015). It should be noted that the data analysis and interpretation used in these studies were not consistent with the data analysis procedures used in evidence-based social skill intervention rooted in behavioral theory. However, since these types of activities (crafts) are so frequently utilized in practical, applied intervention groups, the researcher felt the impact of this instructional activity should be explored in this study, but framed procedurally using a behavioral perspective. Therefore, the perspective taken in the current study was that the act of completing the craft project would not be what impacted social skills, but the environment and the social interactions and communication that occurred during the activity itself would be what impacted social behaviors.

Packaged Social Skill Interventions

Specific social skills intervention programs, which combine evidence-based interventions into a packaged curriculum, provide a manualized intervention that can be easily implemented. Some of these programs include Skillstreaming (McGinnis & Goldstein, 2003), Superheroes Social Skills (SSS;Jenson et al., 2011), and The Program for the Education and Enrichment of Relational Skills (PEERS; Laugeson, Frankel, Mogil, & Dillon, 2009).

Skillstreaming

One manualized social skills intervention curriculum, Skillstreaming (McGinnis & Goldstein, 2003), uses BST procedures such as direct instruction, modeling, rehearsal, feedback, and roleplay to teach social skills (Kornacki et al., 2013). Authors of this curriculum note that it is rooted in the social learning theory and incorporates behavioral

intervention components to remediate skills deficits which have manifested as a result of a lack of appropriate models and exposure to appropriate problem solving and social skills (Goldstein & McGinnis, 1997; McGinnis & Goldstein, 1997, 2003). Identified social skills are presented based on developmental level across three age groups (early childhood, elementary school age, adolescence). The early childhood curriculum groups 40 skills into six categories: (a) beginning social skills, (b) school-related skills, (c) friendship making skills, (d) dealing with feelings, (e) alternatives to aggression, and (f) handling stress (McGinnis & Goldstein, 2003). There are 60 skills for the elementary age child grouped into five skill categories: (a) classroom survival skills, (b) friendship-making skills, (c) skills for dealing with feelings, (d) skill alternatives to aggression, and (e) skills for dealing with stress (McGinnis & Goldstein, 2003). As for the adolescent curriculum, 50 skills are grouped into six categories: (a) beginning social skills, (b) advanced social skills, (c) skills for dealing with feelings, (d) skill alternatives to aggression, (e) skills for dealing with stress, and (f) planning skills (McGinnis & Goldstein, 2012).

Each skill is broken down into simple, discrete steps that are presented by a facilitator. Operational definitions of the skill are explained and the skill is modeled, students are then asked to engage in role-play activities that are listed in the lesson. Feedback is then provided by the other students in the group and by the facilitator. Several scenarios for role-play are suggested across multiple contexts (e.g., classroom, home, community) to program for generalization. Homework activities are administered with each skill that reminds the students of the skill steps, and provides a space for students to evaluate their practice of the skill outside of the group setting. Skillstreaming

is a collaborative and flexible curriculum that has shown to be effectively administered by a variety of professionals, across multiple settings, and to a wide range of children with various presentations and skill deficits (Sheridan et al., 2011).

Authors of the curriculum report that Skillstreaming has been cited or examined in more than 100 studies (McGinnis & Goldstein, 1997). One such study was conducted by Sheridan et al. (2011) in which Skillstreaming curriculum was implemented to 647 children identified as having social skills deficits. Participants were in kindergarten through third grade and were administered intervention for six weeks. A repeated measures analysis of variance (ANOVA) was conducted to determine significant change in participants' appropriate responses to social scenarios (which required application of the specific skills taught), overall prosociality (as rated by mental health staff), and teacher observation of engagement in the targeted social skills. Results of the statistical analysis revealed that significant increases were observed in participants' overall prosociality as well as in the ratings of each of the targeted skills. Medium effect sizes were reported for teacher ratings and large effect sizes were reported for mental health staff. Results of this study confirmed previously reported effectiveness of the Skillstreaming curriculum, and added to the literature by confirming the utility of this curriculum among a wide age range of individuals within the elementary school setting (Sheridan et al., 2011). Significant limitations to this study include the lack of follow-up data collected on these skills, the exclusion of a generalization task, and the reliance on teacher and mental health staff's ratings of behaviors instead of exploring methods of direct observations in more natural settings.

Lerner and Mikami (2012) compared Skillstreaming with a Sociodramatic Affective Relational Intervention (SDARI) to analyze differences in effectiveness for 13 adolescent males with ASD. Adolescents (ages 9-13 years) were randomly assigned to receive either Skillstreaming or SDARI for four sessions a week, for 4 weeks. Outcome measures included peer sociometric ratings, parent ratings of social behavior, and observation of social behavior during intervention sessions. Participants assigned to the SDARI condition participated in specialized games and activities with others in their group, which allowed them to engage in the targeted skill while interacting with others in a more natural way. Researchers reported that adolescents in the SDARI condition rated each other higher on sociometric ratings and were observed to interact more with one another after a single treatment session than those assigned to the Skillstreaming condition. However, those in the Skillstreaming condition experienced a steady and continuous increase in sociometric ratings and interactions with peers over the course of treatment, while those in the SDARI condition actually experienced a decline in both outcome measures over time. Parent ratings of social behavior remained unchanged after treatment. Findings implicate the utility for both types of interventions, but overall indicate that Skillstreaming contributed to lasting, stable, positive effects for participants (Lerner & Mikami, 2012).

Superheroes Social Skills

SSS (Jenson et al., 2011) is a packaged social skill intervention designed to increase social functioning of elementary children with ASD in the school setting. The intervention package incorporates several evidence-based interventions that are supported in the literature: social narratives, self-monitoring of skills, video modeling of targeted

skills, and incorporation of typically developing peers (Jenson et al., 2011). The curriculum is designed to allow participants to engage in the targeted social skills by participating in group activities, games, and role-plays. Social narratives are also included in the intervention in the form of comic books that are to be read and reviewed as homework. SSS consists of 18 manualized lessons that are presented in the same format of nine steps: checking in with participants, reviewing rules of the group and introducing the target social skill, teaching skill steps via animated characters on a DVD, watching video models of same age peers engaging in the skill, role-playing the skill, watching an animated social narrative of the skill, playing a game using the skill, explain and distribute homework, and offer reinforcement for participation (Jenson et al., 2011). Skills included in the program range from basic social skills (joint attention, imitation, participation) to more complex skills (perspective taking, conversation skills, responding to bullying).

Radley, Ford, et al. (2014) evaluated the impact of the SSS curriculum at increasing social interactions during unstructured play when administered to four children, ages 8-10 years old, with ASD in the public school setting. Intervention was implemented for 30 minutes, once a week, across eight weeks. Observations were conducted on the playground during recess and social engagements for each participant were recorded. A child was considered engaged if they were participating in a game with others or were engaged in joint conversation or play with others. Engagement at baseline was compared to social engagement during intervention and results concluded that for all participants there was an overall increase in the percent of engaged time observed that continued with a steady upward trend for three of the four participants. Implications from

this study suggest that implementing the SSS program in a school-based setting does lead to a generalization of skills to unstructured play settings where participants were observed to increase their overall level of social engagement (Radley, Ford, et al., 2014).

Further analysis of the SSS program sought to extend effectiveness of the intervention curriculum to a broader population of preschool age children with social skills deficits (Radley, Jensen, et al., 2014). Although the curriculum was designed for elementary age children, researchers deemed the first eight lessons of the curriculum to be appropriate for use with preschool children. Skills included: getting ready for circle time, following directions, calming down, participating, imitation, eye contact, expressing wants/needs, and joint attention. One social skills group, consisting of two typically developing peers and two children with developmental disabilities who had been referred for social skill intervention by their teacher, received intervention. All participants were 4 years old and one of the target students was male and one was female. The group met for intervention twice each week for 30-minute sessions, across four weeks. Treatment outcomes were evaluated by collecting data on the number of social engagements the target children had during a free-play period in the classroom. Findings indicated that the SSS curriculum was effective at increasing social engagement of two preschool children with developmental disabilities and social skills deficits. The female student increased her average peer engaged time by approximately 10%, and the male student increased his average peer engaged time by roughly 20%. While this study presents a small case example, it does contribute and confirm previous research on the effectiveness of this specific intervention program at increasing social behavior and appropriate social interactions with target students' peers (Radley, Jensen, et al., 2014).

PEERS

A third social skills intervention program that has been supported as efficacious in the literature is the Program for the Education and Enrichment of Relational Skills (PEERS; Laugeson et al., 2009). While this program was mentioned previously, it is described in more detail below. PEERS is an established, manualized, evidence-based curriculum designed to teach social skills to adolescents in middle and high school (Schohl et al., 2014). PEERS is an adaptation of a previous parent-assisted social skills curriculum, Children's Friendship Training (CFT), designed to target social skills in elementary-aged children (Frankel & Myatt, 2003). PEERS implements intervention using the same format and instructional methods as CFT, but uses modified skills and topics that are developmentally appropriate for adolescents with social skills deficits, particularly those with higher functioning ASD (Laugeson et al., 2009). PEERS sessions take place in small group setting, and provide evidence-based instructional strategies (direct instruction, modeling, rehearsal, performance feedback) paired with socialization assignments to teach skills (Laugeson et al., 2009). A unique element to PEERS is the parent component of the intervention, which requires parents of individuals participating to attend intervention sessions of their own that use BST strategies to teach parents how to be supportive of their child's social skills development by coaching them through social situations, providing performance feedback on their social behaviors, and encouraging them to seek out social opportunities (Schohl et al., 2014). Specific skills targeted through PEERS include how to have appropriate conversations, developing friendships and peer groups, how to manage arguments with others, changing reputations, having good sportsmanship, and how to handle teasing (Laugeson et al., 2009).

The initial evaluation of PEERS was conducted by the authors of the program and explored the impact of the program on adolescents' knowledge of social skills, global social behavior (per parent report), and the frequency of time spent with peers in social situations (Laugeson et al., 2009). According to the researchers, PEERS significantly improved global social skills and knowledge of social skills, as well as increased the amount of time spent engaged with peers in 33 adolescents, ages 13-17 years old with high functioning ASD, when compared to a control group of adolescents who were on a waitlist for participation in PEERS.

In order to validate the implications of the effectiveness of PEERS, Schohl et al. (2014) implemented PEERS to adolescents, 11-16 years old, with social skills deficits and a previous or current diagnosis of a developmental disability. Fifty-eight participants were randomly assigned to either the waitlist control group or to the PEERS group. Intervention was provided once a week for 90-minute sessions, across 14 weeks. Analysis of pre-post data supported previous findings (e.g., Laugeson et al., 2009) that adolescents in the PEERS condition experienced significant increases in their global social skills, friendship skills, knowledge of specific skills targeted by PEERS, and the amount of time spent hanging out with friends than participants assigned to the control group. Furthermore, measures of social anxiety indicated a significant decrease in socially anxious behaviors and thoughts among participants in the PEERS condition (Schohl et al., 2014). Lack of diversity in the population participating in this study serves as a primary limitation to the findings, as well as the fact that no follow-up data were collected.

In an effort to address the lack of long-term outcomes of PEERS, Mandelberg and colleagues (2014) contacted a sample of 53 families who had previously participated in the initial program evaluation study (Laugeson et al., 2009). Participants in the current study were administered several standardized assessment measures and behavior rating scales in order to create a global profile of their current social functioning (Mandelberg et al., 2014). At the time of data collection, participants had concluded their participation in PEERS between 1 and 5 years prior. Researchers concluded that the positive outcomes and significant increases in social skills, social responsiveness, and overall quality and quantity of peer relationships of adolescents participating in PEERS were maintained, even for those who had completed the intervention 5 years ago (Mandelberg et al., 2014). The primary limitation to this study that does impact the magnitude of the intervention results is that follow-up measures were not administered to any of the original participants in the study who were assigned to the control group. If this information was collected and analyzed, researchers could make more robust claims regarding long-term effects of PEERS and reduce the potential influence of external variables, such as maturation and involvement in other intervention programs.

The social skills programs described above represent a small sampling of the intervention options available. These three were selected for review because they were not only evidence-based, but their effectiveness and utility was studied and validated, which is not typical of many advertised and commercially sold pre-packaged social skills intervention programs.

Summary of Literature Review

The significant impact of social skills on a child's development paired with the increasing number of children across a variety of populations that exhibit social skills deficits has contributed to an increase in the amount of studies exploring the effectiveness of strategies used to teach social skills to children. While studies in the literature take a variety of perspectives when conceptualizing social skill deficits, there is a consensus across the literature that interventions using applied behavioral strategies are the most common and the most effective at increasing social skills, particularly children with ASD and ADHD (Reichow & Volkmar, 2010).

One specific behavioral-based strategy, BST, is a combination of direct instruction (breaking the skill down into steps that are taught in succession), modeling (watching others engage in the skill), rehearsal (practicing the skill), feedback (description of how well the skill was performed), role-play (applying the skill to a scenario and acting out the scenario with others), and reinforcement to increase target behaviors (Kornacki et al., 2013) has shown to be an effective behavioral strategy to teach specific social skills to a variety of individuals. BST has been used to increase conversation skills of adults with ASD, Down Syndrome, and intellectual disability (Kornacki et al., 2013), to increase appropriate social behavior of upper elementary, middle school, and high school students with ASD and behavioral disorders (Matthews et al., 2013), and to increase specific social skills of preschool and elementary-aged children with ASD (Leaf et al., 2010). BST is considered a well-established intervention within the literature and is generally a central component of most evidence-based social skills interventions.

Incorporating the participation of same-age typically developing peers into social skills interventions with children who have social skill deficits is another common strategy that has been supported in the literature. Early elementary students with ASD experienced an increase in appropriate conversation skills, an increase in the length of conversation with peers, and an increase in the use of appropriate phrases with their peers after participating in a social skills group with their typically developing peers who were trained to provide verbal praise and prompting during the group sessions (Chung et al., 2007). Training three classmates of a child with ASD (who typically played alone) to interact positively with the child in their class who had ASD showed an increase in the target child's social network salience score that persisted throughout the school year (Kasari et al., 2012).

Play-based interventions, while not yet considered evidence-based, are an area that has been recently explored in the literature. The rationale for the investigation of this type of intervention is that the majority of peer-reviewed studies looking at social skills measure the dependent variables in a free-play context with the intention of capturing social behaviors in a more natural setting (Jung & Sainato, 2013). Thus, the argument is that it would be logical that to increase these natural play and interaction skills of children, researchers as well as practitioners should intervene on those exact skills that are necessary for play with other children. It is also well demonstrated that play can facilitate a child's global development and learning (Lantz et al., 2004; Stagnitti, 2009; Wolfberg & Schuler, 1993). Providing verbal prompts and reinforcement in the formal of verbal praise to preschoolers with developmental disabilities as they play with peers was shown to increase target play behaviors (Lifter et al., 2005). Play skills were also taught

to children with ASD using BST procedures followed by the application of those procedures in a cooperative play setting with other peers, authors also reported that these skills successfully generalized to an additional setting (Jahr et al., 2000). Specific types of play activities have also been explored in isolation, often without the incorporation of BST, to determine if certain activities would contribute to an increase in social skills for children.

Team-based activities have only appeared in the social skills literature a handful of times. However, despite the limited number of studies, there is preliminary support for the use of these types of activities at increasing social skills. Elementary-aged and adolescent children with developmental disabilities showed improvements in their initiation of social contact and the duration of their social interactions with others after participating in a group that required children to work together to build a structure with LEGOS® (LeGoff, 2004). When this model of intervention was compared to another social skills group intervention that incorporated the use of social stories, adult modeling, role-play, and games, it was concluded that the LEGO® group experienced more positive outcomes in regards to the increase of prosocial behavior and decrease of maladaptive behavior (Owens et al., 2008).

While craft activities are frequently used clinically in social skills groups as a way to create some sort of visual prompt of the skill learned, or as a way for children to engage in an enjoyable activity together, there is no support for the use of this type of activity in isolation, particularly within the behavioral literature. However, art therapy combined with cognitive behavior therapy techniques did positively impact internalizing and problem behaviors as well as assertiveness of an adolescent with ASD (Epp, 2008).

Finally, packaged social skills interventions, such as Skillstreaming (McGinnis & Goldstein, 2003), SSS (Jenson et al., 2011), and PEERS (Laugeson et al., 2009) have also been explored in multiple studies to determine the effectiveness of the package as a whole. These three curriculums showed an increase in social skills of a variety of ages and developmental levels of individuals. However, a majority of packaged curriculums have not been investigated as rigorously as the three mentioned here, but are still being used frequently in both schools and clinics. Further, many practitioners do not have the financial resources to purchase these products and are limited in their ability to deliver a comprehensive group intervention session that includes not only direct instruction of the skills, but also activities that appropriately and effectively facilitate social skills development.

This review reveals a clear gap in the social skills intervention literature, specifically within the delivery of group interventions. Questions arise among practitioners as well as researchers, such as: Should additional activities used in social skills groups be selected more deliberately? Should interventions aim to provide more opportunities for the development of social skills through play activities? While literature in this area has compared two completely different structures of social skills interventions to one another, no study has combined the two elements (direct instruction and play/activity-based activities) together into one intervention and determined effectiveness. Furthermore, literature has not compared these different types of activities to one another to determine if one is more effective at eliciting appropriate social behaviors. The purpose of the current study is to determine if direct instruction of social skills combined with one of three instructional activity methods will be effective at

eliciting appropriate social behaviors of elementary-aged children (ages 6 to 8 years old). Further, the researcher intends to determine if any one of the three instructional activity methods will be more effective than the others at eliciting these appropriate social behaviors while also decreasing maladaptive behaviors. The research questions that will be answered in this study are:

Research Question #1: Does a combination of direct instruction, behavioral skills training, and the opportunity to engage in an instructional activity lead to an increase in prosocial behaviors?

Research Question #2: Which of the three instructional activities (craft, team-based, structured play) is most effective at eliciting prosocial behaviors?

Research Question #3: Does a combination of direct instruction, behavioral skills training, and the opportunity to engage in an instructional activity lead to a decrease in maladaptive behaviors of children with social skills deficits in a free-play setting?

Research Question #4: Which of the three instructional activities (craft, team-based, structured play) is most effective at decreasing maladaptive behaviors?

Research Question #5: Which of the three instructional activities (craft, team-based, structured play) is most effective at increasing the frequency at which participants initiate a conversation during a free-play setting?

CHAPTER III

METHODOLOGY

This study sought to analyze the effects of the combination of BST with three different instructional activities on prosocial and maladaptive behaviors, and the impact of the intervention on a target social skill (initiating a conversation). This study was approved by the Internal Review Board (IRB) prior to the implementation of the intervention and the data collection process (see Appendix A for IRB approval letter). The following sections are included in this chapter so that the specific methods for answering the research questions are provided: (a) materials and assessment instruments used; (b) participants and setting; (c) independent variable; (d) dependent variables; (e) data collection; (f) design and data analysis; (g) procedure; (h) training of facilitators and observers; (i) procedural reliability; (j) interobserver agreement; and (k) treatment acceptability.

Materials

Materials for the study included a demographic questionnaire (see Appendix B) as well as two standardized assessment measures, which were used in participant screening. The measures used were the Vineland Adaptive Behavior Scales, Second Edition (Vineland-II; Sparrow, Cicchetti, & Balla, 2005) and the Social Responsiveness Scale, Second Edition (SRS-2; Constantino, 2012). Other materials included audio-video recording equipment (iPads, laptops) and a variety of materials that were necessary for

completion of the various instructional activities during intervention and baseline sessions. Additionally, a variety of toys and games were used during free-play sessions (specific materials described in the procedure section). Specific materials used during activities are discussed in the procedure section below and are also listed in the activity instruction sheets (see Appendix C) and the activity protocols (see Appendix D).

Vineland Adaptive Behaviors Scales

The Vineland-II (Sparrow et al., 2005) is an individually administered measure of adaptive behavior for individuals birth to 90 years. The scales are available in three versions: Survey Interview Form, Parent Rating Form, and Teacher Rating Form. There are 11 subdomains of adaptive functioning that are grouped into four domain composites: Communication, Daily Living Skills, Socialization, and Motor Skills. Three of the composite scores (Communication, Daily Living Skills, and Socialization) are combined to yield an Adaptive Behavior Composite Score which reflects the individuals overall adaptive functioning. Scores on each subdomain are expressed as V-scaled scores (M = 15, SD = 3), and domain composite scores as well as the Adaptive Behavior Composite Score are expressed as standard scores (M = 100, SD = 15). Percentile ranks, normal curve equivalents, age equivalents, and adaptive level are also provided. Test-retest reliability ranged from .76 to .92, across domains, and concurrent validity with another adaptive behavior scale was measured at .70. Participants parents/guardians were administered the Communication subdomain of the Parent/Caregiver Rating Form. The Communication Domain measures an individual's receptive, expressive, and written language abilities. Receptive communication refers to the ability to understand spoken

language and respond to what is being verbalized while expressive communication refers to the ability to use language to verbally communicate with others. Participants had to have a standard score of 70 or higher in this domain to participate in this study.

Social Responsiveness Scale (SRS-2)

The SRS-2 (Constantino, 2012) is a rating scale that measures several areas of social behavior deficits typically associated with individuals who have a diagnosis of ASD. This rating scale consists of 65 items that ask questions pertaining to the following subscales: Social Awareness, Social Cognition, Social Communication, Social Motivation, and Restricted Interests and Repetitive Behaviors. The SRS-2 also yields a total score that indicates severity of social deficits experienced by the individual. Reliability was measured using internal consistency, and ranged from .94 to .96. Reported test-retest reliability ranged from .88 to .95. SRS-2 scores are reported as *T*-scores ($M = 50$, $SD = 10$) across all subscales and a total SRS-2 score. Scores of 76 or higher are considered severe and suggest that the individual's deficits in that area fall in the clinically significant range, scores falling between 66 and 75 indicate moderate deficits in social behavior, scores between 60 and 65 indicate mild social behavior deficits, and scores 59 and below indicate that the individual likely does not experience social deficits that are typical among individuals with ASD. The Parent Report Form of the measure was administered to the participant's parent/guardian. The participant's total SRS-2 score had to be 60 or higher (indicating the presence of at least a mild deficit in social skills) to be included in this study.

Demographic Questionnaire

To gain a better understanding of the make-up of the participants, a demographic questionnaire was created by the researcher. This questionnaire, the Participant Demographic Questionnaire (see Appendix B), was developed to collect information about the age, race, gender, grade level, school, and activity preferences of the participant. The questionnaire gathered additional information about diagnoses, special education eligibility and placement, and specific behavior concerns that the parent/guardian may have for the participant.

Participants and Setting

The study was conducted at a university-based school psychology services clinic located in the rural southeastern United States. Intervention sessions took place in four large treatment rooms within the clinic. A total of four children ranging from 6 to 8 years old were placed into one social skills group; all four participants participated in each session of the intervention. The number of participants was similar to other single-case design studies exploring effectiveness of interventions on social skills, typically ranging from one to five participants (Camargo et al., 2014). Participants were recruited from the existing client population at the university-based school psychology services clinic. Families of current clients were provided with an informational flyer about the intervention program/study that included a phone number and email address with directions for enrolling their child in the current study. Individuals on the in-house waitlist were contacted by telephone and given information about the program/study and

asked if they were interested in participating. Once a list of potential participants was created, screenings were conducted to evaluate inclusion in the study.

Several criteria were considered for participants' inclusion: (a) chronological age between 6 years, 0 months and 8 years, 11 months; (b) adequate expressive and receptive language skills, as measured by the Vineland II Parent Rating Form (Sparrow et al., 2005) ; and (c) social skills deficits as measured by the SRS-2 (Constantino, 2012). See Appendix B for Screening Protocol and Participant Inclusion Criteria Form. Additionally, written consent was obtained from each participant's legal guardian that allowed the child to participate in the study. Consent forms provided were approved by the IRB and were given to guardians before screening information was gathered.

Alice

Alice was a 6-year-old Caucasian female who had recently completed Kindergarten at the time of the study. Alice had a diagnosis of developmental delay and received special education services through an eligibility ruling of Other Health Impairment (OHI), per parent report. She received services in an inclusion setting and participated in the general education curriculum for the majority of the school day. Alice's parents indicated that they were equally concerned with her behavior problems, social skills, and academic skills. Alice's total score on the Communication Domain of the Vineland-II was an 83, which indicated her communication skills were in the below average range, but were at a level that was adequate for her inclusion in this study. Her SRS total score was 85, indicating that her social skill deficits were in the significant range, and qualified her for inclusion in this study. When Alice's parents were asked

what activities she enjoys, they indicated that she prefers having access to an iPad/computer/video game the most, followed by playing with cars/trucks/planes/trains, and then drawing/coloring/completing craft projects.

Sam

Sam was an 8-year-old Caucasian male who had recently completed first grade at the time of the study. Sam had a diagnosis of ASD, ADHD, and Anxiety, per parent report. Sam received special education services through an eligibility ruling of Autism. He received services in an inclusion setting and participated in the general education curriculum for 50-75% of the school day. Sam's parents indicated that they were equally concerned with his social skills and academic skills, and were slightly less concerned with his behavior problems. His Vineland-II total communication score was a 90, which indicated low average communication skills, which qualified him for inclusion in this study. His SRS total score was 75 indicating social skill deficits in the moderate range, which qualified him for inclusion in this study. Sam's parents reported that he enjoyed playing with an iPad the most, followed by playing outside and playing with animal/dinosaur toys.

Sarah

Sarah was a 7-year-old Caucasian female who had recently completed first grade at the time of the study. Sarah had a diagnosis of ADHD, Oppositional Defiant Disorder (ODD), Developmental Delay, and Post Traumatic Stress Disorder (PTSD), per parent report. Sarah received special education services through an eligibility ruling of developmental delay and ADHD. She received services in an inclusion setting and

participated in the general education curriculum for the majority of the school day. Sarah's parents indicated that they were equally concerned with her social skills academic skills, and behavior problems. Her SRS total score was 81, indicating social skill deficits in the significant range. Her Vineland-II total communication score was a 77, which indicated communication skills in the delayed range, but they were high enough to qualify her for inclusion in this study. When asked about Sarah's preferred activities, her parents ranked using the iPad as her highest preferred activity

Wyatt

Wyatt was a 7-year-old Caucasian male who had recently completed first grade at the time of the study. Wyatt had a diagnosis of ADHD, PTSD, Developmental Delay, and a hearing impairment, per parent report. Wyatt received special education services through an eligibility ruling of developmental delay and speech/language impairment. He received services in an inclusion setting and participated in the general education curriculum for the majority of the school day. Wyatt's parents indicated that they were most concerned with his social skills as well as his academic skills. Wyatt's Vineland-II total communication score was a 75, which qualified him for inclusion in this study. Wyatt's total score on the SRS-2 was 70, indicating moderate social skill deficits, which qualified him for inclusion in this study. When his parents were asked to rank which activities Wyatt enjoys playing with the most, they reported that he prefers playing with the iPad/computer/video games the most followed by playing outside and then playing with blocks/LEGOS®.

Independent Variable

The independent variable in this study is the type of instructional activity incorporated into the social skills group intervention. Three different types of activities were used: a craft activity, team-based activity, and a structured play activity. Of the 15 sessions of intervention, each type of activity was delivered five times, in a randomly selected, alternating order. Activities were randomly assigned before the study began. Each activity type was written five times on five different slips of paper and placed into a cup. Activities were drawn out of the cup at random, and a rule was applied that the same activity could not be selected twice in a row; if it was, it was placed back into the cup and a new activity was drawn. Table 1 lists the randomized order of activities that were pre-selected for intervention implementation.

Table 1

Order of Instructional Activities

Session	Instructional Activity
1	Structured Play Activity
2	Craft Activity
3	Team-Based Activity
4	Craft Activity
5	Team-Based Activity
6	Structured Play Activity
7	Craft Activity
8	Structured Play Activity
9	Craft Activity
10	Team-Based Activity
11	Craft Activity
12	Team-Based Activity
13	Structured Play Activity
14	Team-Based Activity
15	Structured Play Activity

Craft Activity

Of the 15 sessions of intervention, 5 of the sessions implemented a craft activity. Prior to the start of intervention, five developmentally appropriate art activities were selected and examples of the activity were created for presentation. All five art activities selected required the use of basic arts and crafts supplies and required fundamental art skills: coloring, painting, cutting, and gluing. The five art activities were randomly assigned to each of the five craft days prior to intervention. The art projects selected were: constructing paper plate pirates, making a tambourine, creating a paper plate fish,

making paper plate snakes, and creating paper plate suns. See Appendix C for Sample Craft Activity Instructions.

At the conclusion of the lesson portion of the social skills group, facilitators informed the participants that they would be working on an art project that day and presented a sample of the completed product. Basic instructions for completing the project were also provided orally. Necessary supplies were presented to the group, but were not distributed to the individual participants. Materials needed were available, however, facilitators placed materials in one central location and designed the environment so that participants were required to communicate with one another to acquire necessary supplies and share access to some of the materials. For example, when participants were required to color materials, markers provided were all contained within one bin, requiring children to wait their turn for a color and ask a peer to share access to the bin. While participants were completing the art project, facilitators provided verbal praise to participants when they interacted with peers or facilitators. Verbal praise was issued at a 1:1 ratio, so each time a targeted appropriate social behavior occurred, the participant received descriptive, positive praise from a facilitator (e.g., "Sam, great job joining in and playing with nicely with your friends"). See Appendix D for Craft Activity Protocol.

Team-Based Activity

Five of the intervention sessions implemented a team-based activity. The intent of these activities was to provide opportunities for participants to work together to achieve a common goal. Prior to the start of intervention, five developmentally appropriate marble

run structures were created and photographed. Each structure was equal in difficulty and required the same number of pieces. The five structures that participants would construct were randomly assigned to each of the five team-based activity days prior to intervention. See Appendix C for Sample Team-Based Activity Instructions.

After the social skill lesson was presented, facilitators informed the participants that they would be working on a team activity that day and presented a photograph of the completed marble run structure they would have to build together. Participants were instructed to work together to build the structure and were provided with the necessary pieces and parts required to complete the structure. No specific instructions were given other than a basic demonstration of how to join the pieces of the marble run together to create a structure. All marble run pieces were placed in one central location. While participants were constructing the marble run design, facilitators provided corrective feedback and verbal praise to participants when they interacted with peers or facilitators. After the final product was created, positive reinforcement in the form of verbal praise was provided. See Appendix D for Team-Based Activity Protocol.

Structured Play Activity

The final type of activity implemented across intervention sessions was a play activity. Before intervention began, five developmentally appropriate board games were randomly assigned to each of the five play activity sessions: Candy Land™, Sneaky Snacky Squirrel™, Trouble™, Hi-Ho Cherry-O™, and Chutes and Ladders™. See Appendix C for Sample Structured Play Activity Instructions.

Once the social skill lesson was presented, participants were told they would all be playing a board game together and the game that would be played that day was revealed. Two copies of each game were available and were placed in different locations in the room. Participants were told to go to a game and once all the players were ready, they were to begin. Facilitators did not assign students to a group to play, but made sure that all participants were participating. If none of the participants in the group knew how to play the game or the directions could not be communicated effectively within the group, facilitators explained the directions. While participants were playing, facilitators provided corrective feedback and verbal praise to participants when they interacted with peers or facilitators. See Appendix D for Structured Play Activity Protocol.

Dependent Variables

The occurrence of appropriate social behaviors and inappropriate problem behaviors as measured by direct behavior observations were selected as the dependent variable in this study. Specific target behaviors and the data collection method used to measure the occurrence of these behaviors were adapted from the observation methods used by Gadke (2013).

Data Collection of Behavioral Observations

Each participant was observed using a momentary time-sampling structure during a 15-minute free-play session at the end of each group intervention session. Target behaviors were coded during 3-second intervals every 30 seconds of the 15-minute observation session. A behavior had to occur during the 3-second interval in order to be

coded. All free-play sessions were recorded and were later reviewed and coded using the observation procedures. See Appendix E for Observation Sheet.

Participants' behavior was coded for the possible occurrence of 17 different behaviors. These behaviors were grouped into three categories: play behaviors, communication, and maladaptive behaviors. If more than one behavior occurred within the 3-second interval, it was recorded. Play behaviors included five types of play as well as helping. Unoccupied play was coded when a child was not directly engaging with others or with any appropriate play materials and was instead staring blankly around the room, walking around the room with no purpose, or playing with their own body parts. Onlooker play occurred when a child was standing within five feet of a group of two or more peers and orienting their bodies in the general direction of the group. Solitary play was coded when a child played appropriately with toys/materials, but did so in isolation. Parallel play occurred when a child played appropriately with toys/materials within three feet of another peer, but did not have any interaction with the peer. Cooperative play was coded when the child was directly interacting with toys/materials and talking to another child. Finally, helping behavior was coded when a child acted empathetically toward a peer, engaged in perspective taking, helped a peer complete a task, or offered comfort to an upset peer.

The second category, communication, included four behaviors: (a) initiating (b) engaging in spoken conversation, (c) participating in or responding to spoken conversation, (d) engaging in self-talk, and (e) gesturing appropriately. Initiating spoken conversation was coded when a child began a conversation with a peer or adult

facilitator, either by asking a question, or making a direct statement/comment to another individual. Participating in or responding to conversation occurred when a child answered a question that was directly asked of them, commented back to another individual, or was speaking directly to another individual with communicative intent. Self-talk was coded when a child was talking out loud, but the content of the speech was not aimed at any specific person. Gesturing occurred when a child pointed at or handed toys/materials to another individual either to share or bring attention to the activity or themselves.

The final category, maladaptive behaviors, included disruptions, negative interactions, aggression, tantrums, and atypical behaviors. Disruptions occurred when a child engaged in behaviors that interfered with the play/interaction of others, such as climbing or standing on furniture/toys, throwing objects, and kicking/hitting the wall. Negative interactions was coded when a child was reprimanded, given a warning, placed in time out by a facilitator, or argued or spoke negatively to a peer or a facilitator. Aggression was coded if a child was verbally or physically aggressive, or was engaged in aggressive play. Tantrums were coded when a child engaged in a combination of crying, whining, yelling, flopping onto the ground, and any of the disruptive behaviors previously described. Atypical behaviors occurred when a child engaged in self-injurious behaviors, hand flapping, pacing, or body rocking. Table 2 depicts the operational definitions for each of the dependent variables.

Table 2

Operational Definitions of Behaviors

Behavior Category	Behavior	Operational Definition
P	Unoccupied Play	Not directly engaging with others, not engaging with appropriate play materials, staring blankly around the room, walking around the room with no purpose, playing with own body parts
P	Onlooker Play	Standing within 5 feet of a group of 2 or more peers, orienting body in general direction of group
P	Solitary Play	Playing appropriately with toys/materials but in isolation
P	Parallel Play	Playing appropriately with toys/materials within 3 feet of a peer, but not interacting with the peer
P	Cooperative Play	Directly interacting with toys/materials with a peer and talking to the peer during play
P	Helping	Acting empathetically toward a peer, engaging in perspective taking, helping a peer complete a task, or offering comfort to an upset peer
C	Initiating Spoken Conversation	Starting a conversation with a peer/adult either by asking a question or making a direct statement/comment to another individual

Table 2, continued

C	Participating/Responding to Conversation	Answering a question directly asked to them, commenting back to another individual, or speaking directly to another individual with communicative intent
C	Self-Talk	Talking out loud, but the content of the speech is not aimed at a specific individual
C	Gesturing	Pointing at or handing toys/materials to another individual either to share or bring attention to the activity or themselves
M	Disruption	Engaging in behaviors that interfere with the play/interactions of others, such as climbing or standing on furniture/toys, throwing objects, hitting/kicking the wall or toys
M	Negative Interactions	When a child was reprimanded, given a warning, or placed in time out by a facilitator or arguing/speaking negatively to another individual
M	Aggression	Verbal aggression (e.g., calling someone names, yelling at another individual) or physical aggression (e.g., hitting/ kicking/throwing items at another individual); aggressive play
M	Tantrum	Combinations of at least two of the following: crying, whining, yelling, flopping onto the ground, combination of any of the previously described maladaptive behaviors

Table 2, continued

M	Atypical Behaviors	Self-injurious behavior, hand flapping, pacing, body rocking

Note. "P" indicates Play, "C" indicates Communication, "M" indicates Maladaptive

Design and Data Analysis

An Alternating Treatments Design (ATD) between-series elements single-subject design was used to evaluate the effects of delivering social skill instruction through differentiated activities (e.g., craft activity, team-based activity, structured play) on participants' engagement in the selected target behaviors during unstructured play. Single subject design methodology was chosen for this study as the majority of studies examining effectiveness of behaviorally based interventions for children with social skill deficits utilize a single-subject design (Reichow, Volkmer, & Cicchetti, 2008; Wang, Parilla, & Cui, 2013). More specifically, this design was thought to be the most effective way to determine if one instructional activity was more effective at eliciting appropriate social behaviors than another. Further, this design allowed for rapid, random alternations of the three activities while incorporating experimental control. While not necessary for an ATD, a single baseline session was included in this study, as this provided an additional data point to justify intervention effectiveness. Single subject design graphs were created for each participant as well as for the group as a whole. These graphs depicted the frequency of intervals in which prosocial behaviors occurred, the frequency of intervals in which the specific target skill (initiating conversation) occurred, and the frequency of intervals in which maladaptive behaviors occurred. As shown in the table

above (Table 2), if any of the listed prosocial behaviors took place during an interval, it was counted as an occurrence. The same for maladaptive behaviors, if any of the listed maladaptive behaviors took place during the interval, it was counted as an occurrence. Therefore, the maximum number of intervals these behaviors could take place in each session would be 30; thus, if behaviors occurred in all 30 intervals, the percentage plotted on the graph would be 100%.

Data were analyzed using visual analysis procedures to identify divergence of the target behaviors across the three alternating treatment procedures in order to determine if one treatment was superior to others. In addition, the average occurrence of dependent variables within each of the three structured play activities was calculated and compared. Finally, a simple calculation was conducted to determine the effect size of this intervention for each participant and the group.

There is debate within single-subject design literature regarding the most appropriate effect size calculations, as well as the utility and reliability of effect size measurements; in fact, effect sizes reported often vary depending on the calculation method selected (Parker & Brossart, 2003). However, percentage of non-overlapping data points (PND) is the most frequently used method to determine effect size and is heavily supported in the single-subject design literature (Beretvas, 2006). Traditionally, PND is calculated by dividing the number of non-overlapping data points between baseline and intervention by the total number of data points in the intervention phase (Beretvas, 2006). Based on Beretvas' (2006) procedures, the number of non-overlapping data points is determined by identifying the most extreme data point in the baseline phase that is in the

undesired direction and drawing a horizontal line from that data point across all the data points in that graph (across intervention and baseline) then counting the total number of data points in the intervention phase that are either above or below the line (depending on the intended direction of data in the intervention phase). The difficulty in applying these methods of PND to an alternating treatments design is that there are not enough baseline data points to correctly calculate the effect size. While effect sizes are rarely reported utilizing alternating treatments designs, the researcher determined that this calculation method should be included in the data analysis procedures because the results can facilitate in the overall interpretation of the data while also assisting the researcher in comprehensively answering the research questions regarding treatment effectiveness.

Since the primary purpose of this study was to determine which of three treatments was most effective in comparison to one another (and not necessarily to a baseline measure), the effect sizes were calculated by determining PND between each treatment, relative to the other treatments (i.e., calculating the percentage of non-overlapping data points between team-based activities and structured play activities). Further, comparisons differed across each participant depending on which of the treatments was considered superior for that variable and for that individual, which follows Olive and Smith's (2005) recommendations for computing effect sizes for an alternating treatments design. The superior treatment was considered the treatment that resulted in the highest average occurrence of behaviors (or lowest average for behaviors that were intended to decrease over time). After PND was calculated, the values were interpreted using the criteria proposed by Scruggs and Mastropieri (1998): PND of 90%

or higher indicates highly effective treatment, 70%-89% indicates moderately effective treatment, 50%-69% indicates questionable treatment effectiveness, and if PND is 49% or lower, treatment is considered to be ineffective.

Procedure

Group Structure

Each participant received social skill intervention in a group format. The social skills group consisted of four same-age peers (age 6-8) and was implemented by two trained graduate student clinicians in a school psychology program. The graduate students had taken advanced course work in behavior modification/intervention and had clinical experience working with children from various clinical populations (e.g., ASD, ADHD). Prior to their involvement in this study, graduate student facilitators completed a training and were required to practice implementing the social skills group intervention with 90% integrity. All children receiving intervention in the social skills group were included in the study.

Each of the 15 social skills group sessions was 50 minutes in length and took place four times each week, for three consecutive weeks. Each session consisted of a lesson on one target social skill (10 minutes), an activity that provided opportunities for participants to practice the skill and receive feedback from facilitators for engaging in that skill and for engaging in prosocial behaviors (25 minutes), and a free-play session (15 minutes). While the lesson and free-play portions of the session remained the same across each session, the type of activity selected (craft activity, team-based activity,

structured play activity) was randomly selected and alternated across sessions so that each activity type was used in five different sessions.

Baseline

After participants were screened for inclusion in the study, they were placed into a social skills group with same age peers (the other participants in the study). The social skills group consisted of up to six participants. All participants came to the clinic for an initial baseline session. At this session, the group facilitators introduced themselves and participants introduced themselves to one another (with support from facilitators). Facilitators explained to the participants the nature of the group sessions and briefly discussed different activities that they would get to complete over the next few weeks. As a group, the participants helped create four simple, positively stated rules for the group, and rules were written down on a large poster board. Facilitators then modeled and role-played the rules and then demonstrated examples and non-examples of these rules. Participants and facilitators then completed an activity together that required participants to draw themselves and then identify three facts about themselves that they wanted others in the group to know about them. These facts could be written or depicted in drawings. Each participant and facilitator then shared their drawings with the group. Facilitators prompted appropriate responses and participation as needed. At the conclusion of this activity, participants were introduced to the free-play room and were given access to all activities and toys in the room. See Appendix D for Baseline Session Protocol.

Behavior Skills Training

At the beginning of each session, participants received a structured lesson for the first 10 minutes. The specific skills selected were intended to provide direct instruction in the areas of reciprocal communication and play to the participants The lesson portion of the session was modeled and adapted from *Skillstreaming the Elementary Child* (McGinnis & Goldstein, 1997). One social skill was selected from this curriculum: Beginning a Conversation (reciprocal communication). This skill was selected because this specific skill is considered a precursor social skill that facilitates development of more advanced social skills. Skill steps provided within the Skillstreaming curriculum were used and supplemented with visual aids to facilitate teaching of each skill. See Appendix F for Skill Step Labels.

Pairing presentation of the given skill steps with behavioral skills training techniques created the structure for the lesson portion of the social skills group. In addition, the suggested modeling situations listed in the Skillstreaming manual were also used as a guide for creating modeling and role-play situations each day. The manual provides an example for students to practice the skill in a school, home, peer group, and community settings. Each day of instruction included one modeling and one roleplay situation from each of these four settings. Scenarios for each setting were predetermined and selected for use prior to the start of intervention. See Appendix F for Modeling Scenarios and Roleplay Scenarios.

Facilitators of the social skills groups (trained graduate students) modeled the skill steps in each of the practice scenarios, then paired participants together to practice the skill steps using the selected role-play scenarios. Students were randomly

paired/grouped together at the beginning of the session by drawing participants' names out of a cup. These pairs/groups would remain the same for the remainder of the activities of that session. Facilitators provided ongoing corrective feedback of the participants' practice of the skill immediately. At each session of the intervention the skill presented remained the same: beginning a conversation- as did the skill steps and the presentation of the skills steps. The applied scenarios used for modeling and role-play changed slightly at each session, but remained rooted within each of the four predetermined contexts (school, home, peer group, community). See Appendix F for Lesson Protocol.

Free-Play Session

The final portion of each intervention session consisted of a 15-minute free-play period. After materials were cleaned up from the activity, participants were directed to a second treatment room where toys and activities were freely available. The toys and activity options remained the same and were placed in the same locations in the room each day. Rules from the intervention treatment room that were explained at the initial baseline session were posted in the room and participants were reminded that although this was their free-play time, they were expected to follow the group rules. Facilitators did not give any directions nor did they prompt participants to play together or play with any certain materials. Materials available in the room were: craft supplies (construction paper, glue, yarn, crayons, scissors), board games (Sorry™, Connect 4™), building materials (trains, train tracks, and LEGOS®), and miscellaneous toys (one container of toy dinosaurs, one container of cars, and one container of toy animals). Materials were placed in the same location in the room each time. Some of the activity options available

mapped directly on to the types of activities that were implemented and completed within intervention sessions. During the free-play sessions, iPads and laptops were used for audio and visual recording of the session. Trained observers conducted observations and coded recordings using the data collection procedures at a later time.

Training of Facilitators and Observers

Facilitator Training

Each of the two facilitators of the social skills group completed a training conducted by the researcher. This training included the presentation of an intervention manual (created by the researcher) that presented step-by-step instructions of all components of the intervention and baseline sessions. Demonstrations of how to facilitate the social skills group, and presentation of all materials and steps to intervention were given by the researcher. Facilitators were then required to conduct a mock intervention session and were given feedback by the researcher. During the mock intervention session, facilitators were required to implement steps with 90% integrity in order to move forward with facilitating the group sessions.

Observer Training

After the conclusion of the study, graduate students in a school psychology program were trained in data collection procedures by the researcher. This training provided a presentation and overview of the operational definitions of all behaviors that were included in the data collection. There was also education provided about how to conduct a momentary time sampling observation. Data collectors were required to score an 85% or above on a brief assessment that asked questions pertaining to conducting the

observation and specific operational definitions. After observers demonstrated knowledge about the data collection system, they were required to practice conducting the observations using a video recording of one of the intervention sessions. The criterion to independently collect data on recorded sessions was that the observer reach an overall IOA of 90% or above with the researcher. Corrective feedback was provided, as needed, by the researcher during the training.

Procedural Integrity Training

Independent observers who were recruited to observe and complete treatment integrity checklists for baseline, lesson, and instructional activity sessions completed training with the researcher prior to the implementation of the study. During this training, the researcher outlined their responsibilities, reviewed the various steps listed on the session checklists, and provided them with their copies of the checklists they would need for their various sessions. The researcher answered any questions they had and provided more thorough explanations for specific steps of intervention sessions when needed.

Procedural Reliability

One of the social skills group facilitators completed a daily intervention checklist at each of the 15 sessions and during the baseline session. Intervention checklists were developed by the researcher to remind facilitators of the procedures of the intervention. An independent observer also observed during 6 of the 15 intervention sessions (40%) and completed the same integrity checklist. Thus, treatment integrity data were collected for more than the minimum recommended 33.33% of sessions. Integrity was calculated by dividing the number of intervention steps completed by the total number of

intervention steps. If treatment integrity fell below 90% at any point in the intervention implementation, the group facilitators were retrained (using the training procedures described previously) on implementation of the intervention and procedures for facilitating the social skills group. See Appendix G for Treatment Integrity Forms.

Interobserver Agreement (IOA)

After the conclusion of the study, several independent, trained raters watched the video recordings of the free-play sessions and completed the observation procedure for data collection. Trained observers were assigned to various participants and were then given a list of the sessions that they would need to watch and complete the data observation procedures for. To obtain IOA, one third of each of the participants' free-play session videos were double coded, thus two independent observers watched and completed data collection for 5 of the 15 sessions for each participant, as well as the single baseline session. This exceeded the recommended criteria of 33.33% of total observations. Observers were trained by reviewing the operational definitions of behaviors included in the observation as well as the procedures required to complete a momentary time sampling observation. After being instructed on the procedures and the behaviors, they completed a training assessment to ensure that there was understanding of the procedures. After completing and passing the assessment, observers then practiced completing the observation using a recorded intervention session from the study with feedback and guidance from the researcher (see section above, Training of Facilitators and Observers). IOA was calculated by dividing the number of agreements by the total number of disagreements and agreements for each of the fifteen behaviors included in the

observation, and then multiplying by 100 to yield a percentage. The criterion for IOA was set at an average of 85% for the session as a whole; if IOA fell below 85% for any session, the researcher reviewed the operational definitions with the rater and had them review another video and practice the data collection procedures with the researcher present.

Treatment Acceptability

At the conclusion of the study, participants were administered a brief five-question survey including questions pertaining to the social validity and acceptance of the intervention. Questions were read to the participants if they could not read them independently. Responses required participants to select one of three faces (i.e., a smiling face, a neutral face, a sad face) to indicate the expression of their feeling toward each item being asked. Similarly, parents of each participant were also asked to complete a modified version of the Intervention Rating Profile-15 (IRP-15; Witt & Elliot, 1985). The IRP-15 is a 15-item questionnaire completed by teachers to evaluate the acceptability of a specific intervention. All items were answered using a 6-point Likert scale, 1 indicated strongly disagree and 6 indicated strongly agree. The researcher modified statements included in the IRP-15 to more appropriately map on to the context and nature of the intervention implemented in this study. This measure, adapted from the IRP-15 was titled the Parent Intervention Rating Profile, and included the same Likert scale of responses, and 14 similarly stated items. See Appendix G for Child Social Validity Measure and Parent Intervention Rating Profile.

CHAPTER IV

RESULTS

The purpose of this study was to determine if this model of group social skill intervention would be effective at increasing prosocial behaviors of individuals with social skill deficits. More specifically, which of three instructional activities, in conjunction with BST procedures, would be most effective at eliciting prosocial behaviors as well as decreasing the occurrence of maladaptive behaviors. Further, the researcher sought to identify which instructional activity was associated with the largest increase of a target social skill, initiating a conversation. This chapter presents the results of the data that was collected and analyzed through the following sections: (a) prosocial behaviors; (b) maladaptive behaviors; (c) initiating conversation; (d) treatment integrity; and (e) treatment acceptability.

Prosocial Behaviors (Research Questions 1 & 2)

The percentage of intervals in which prosocial behaviors occurred during free-play at each intervention session is depicted for each participant (Figures 1-8) as well as the group as a whole (Figures 9 and 10). Prosocial behaviors included the following instances of both play behaviors and communication: cooperative play, helping, initiating social conversation, participating/responding to conversation, and gesturing. If any of those behaviors occurred within the interval, an occurrence was counted. Percentages

were calculated by dividing the number of intervals in which one of the above prosocial behaviors took place by the total number of intervals in the session and multiplying by 100. A single baseline data point followed by treatment data were plotted on each graph. Since an alternating treatment design was utilized, divergence and convergence of the data relative to each of the treatment strategies was reported. Overall change in level of data from baseline to treatment was also described in the data analysis. Finally, PND was computed to measure effect size of treatments in comparison to the other treatments. PND for each participant is depicted below (Tables 3). In the alternating treatments graphs below (Figures 2, 4, 6, 8, and 10) the circles represent data collected during sessions incorporating team-based activities, squares represent sessions that used structured play activities, and triangles represent sessios that included craft activities.

Alice

When considering the overall occurrence of Alice's prosocial behavior in Figure 1, Alice engaged in prosocial behaviors at a low, but variable level. In baseline, she engaged in prosocial behaviors during 37% of the intervals and once intervention was implemented there was an initial decrease in level. No trends were observed in the treatment phase, due to significant variability.

When considering within treatment effects in Figure 2, the lowest levels of prosocial behaviors occurred when Alice had received social skill instruction using BST combined with a structured play activity. Data under this treatment condition were stable and low across sessions, indicating that for Alice, this instructional activity was not associated with an increase in prosocial behaviors and, therefore, would not be an

effective way to increase her social skills. Sessions that included BST combined with a team building activity also resulted in low levels of prosocial behaviors, however, this activity yielded more variability, making it difficult to determine if this treatment combination was effective. The highest level of prosocial behaviors was observed when Alice received BST combined with a craft activity. While there is still variability in these data, the overall level is higher than in the other two instructional activity conditions.

When considering divergence in the data and determining if one instructional activity is more effective than another, there is some divergence between craft activities and structured play activities, as well as between craft activities and team-based activities. There is little to no divergence between structured play and team-based activities. Further inspection of the data was conducted by computing the average percentage of intervals in which prosocial behaviors occurred within each of the three instructional activities. There are more occurrences, on average, of prosocial behaviors when BST was combined with a craft activity than with any other activity. In fact, in these sessions, a prosocial behavior occurred during an average of 26% of the intervals and these same behaviors occurred during only 8% of intervals (on average) when BST was combined with either structured play or team based activities. This suggests that combining BST with craft activities is slightly more effective at eliciting prosocial behaviors for Alice, specifically.

However, when considering effect size and PND between activities (Table 3), results indicated questionable treatment effectiveness of the craft activity compared to the team-based activity and ineffective treatment of the craft activity compared to the

structured play activity. The implication is that although there were higher frequencies of prosocial behaviors observed under the treatment using craft activities, these frequencies were not significant enough to create a meaningful effect size. That is, using craft activities was not more effective than using team-based or structured play activities. The PND between team-based and structured play activities indicated a moderately effective treatment; indicating significant differences between the occurrences of prosocial behaviors in the team-based and the structured play treatments; concluding that incorporating team-based activities is more effective than structured play activities.

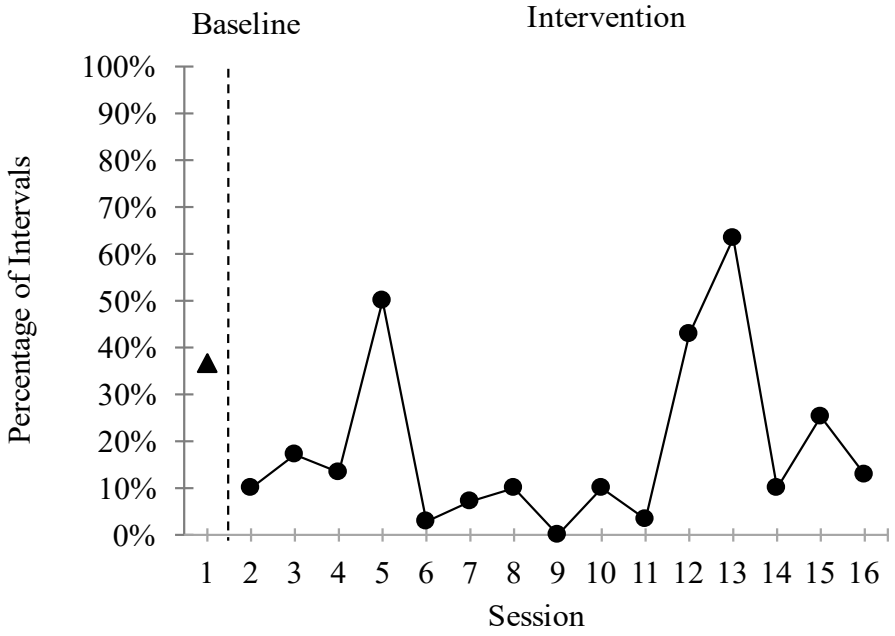

Figure 1. Percentage of intervals in which Alice engaged in prosocial behavior.

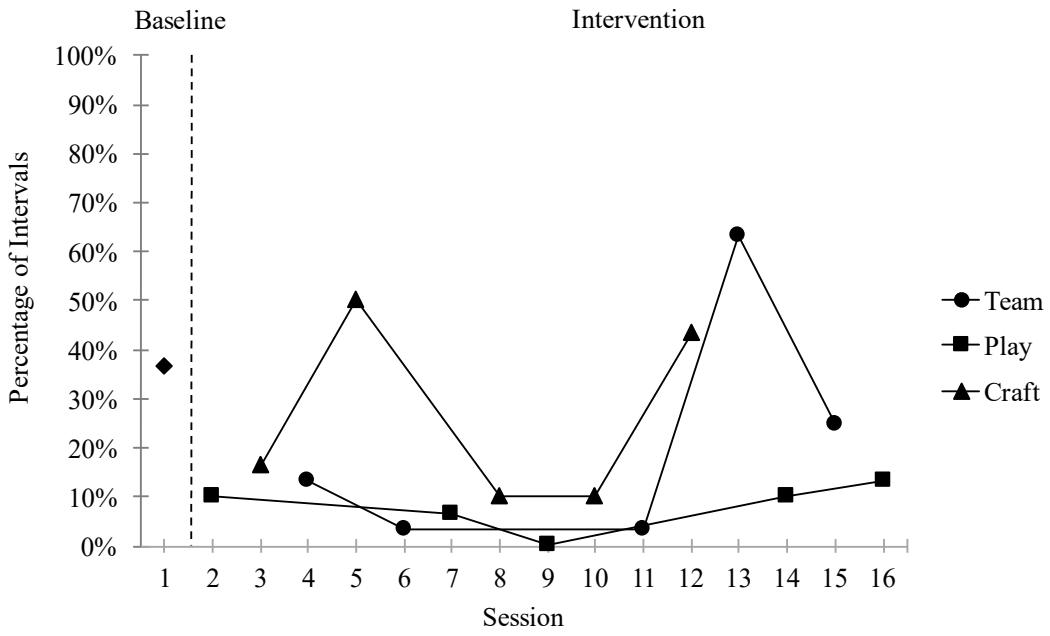

Figure 2. Percentage of intervals in which Alice engaged in prosocial behavior across three instructional activities.

Table 3

Effect Sizes-Prosocial Behavior

Participant	Comparison	PND	Effectiveness
Alice	Craft-Team	60%	Questionable
	Craft-Play	20%	Ineffective
	Team-Play	80%	Moderate
Sam	Team-Craft	60%	Questionable
	Team-Play	40%	Ineffective
	Craft-Play	60%	Questionable
Sarah	Craft-Play	40%	Ineffective
	Craft-Team	40%	Ineffective
	Play-Team	80%	Moderate
Wyatt	Craft-Play	80%	Moderate
	Craft-Team	80%	Moderate
	Play-Team	60%	Questionable
Group	Craft-Play	60%	Questionable
	Craft-Team	20%	Ineffective
	Play-Team	80%	Moderate

Sam

When considering the overall occurrence of Sam's prosocial behavior in Figure 3, Sam engaged in prosocial behaviors at a moderate, but variable level during treatment. During baseline, he engaged in prosocial behaviors during only 3% of the intervals. There was an initial increase in level after treatment began; and although the data were variable across sessions, there was an overall increase in the level of prosocial behaviors Sam engaged in.

Upon analyzing within treatment effects (Figure 4), it can be concluded that the variability made it difficult to determine if any one treatment was more effective than another. The highest occurrences of prosocial behavior were observed when BST was

combined with both structured play and craft activities. However, the lowest occurrences of prosocial behavior were also observed to occur in these same two conditions. A slight upward trend was observed across the sessions that combined BST with structured play activities, but no other trends were present.

Upon visual inspection, it appeared that the highest level of prosocial behaviors was observed when BST was combined with team-based activities, indicating slight divergence in the data; however, there is variability within that data path as well, making it difficult to determine if this treatment was really more effective than another. A calculation of the average percentage of intervals in which a prosocial behavior occurred within each of the three treatment combinations indicated that when BST was combined with team-based activities and with craft activities, Sam engaged in prosocial behaviors during 23% of the intervals; thus, there was no differentiation in treatment effects between those two activities, which indicated that using both of those activities would be equally effective for Sam. When BST was combined with structured play activities, he engaged in prosocial behaviors during an average of 19% of the intervals, which is only slightly less than in the other two treatment combinations. Therefore, there is a moderate amount of overlap seen within the three different instructional activities during the treatment phase. The PND (Table 3) implies the same conclusion, that treatment effects of team-based activities were questionable and ineffective when compared to craft and structured play activities respectively; treatment effects of craft activities when compared to structured play activities were also questionable. Overall, due to the significant overlap of data points, no argument can be made regarding the most effective treatment for Sam.

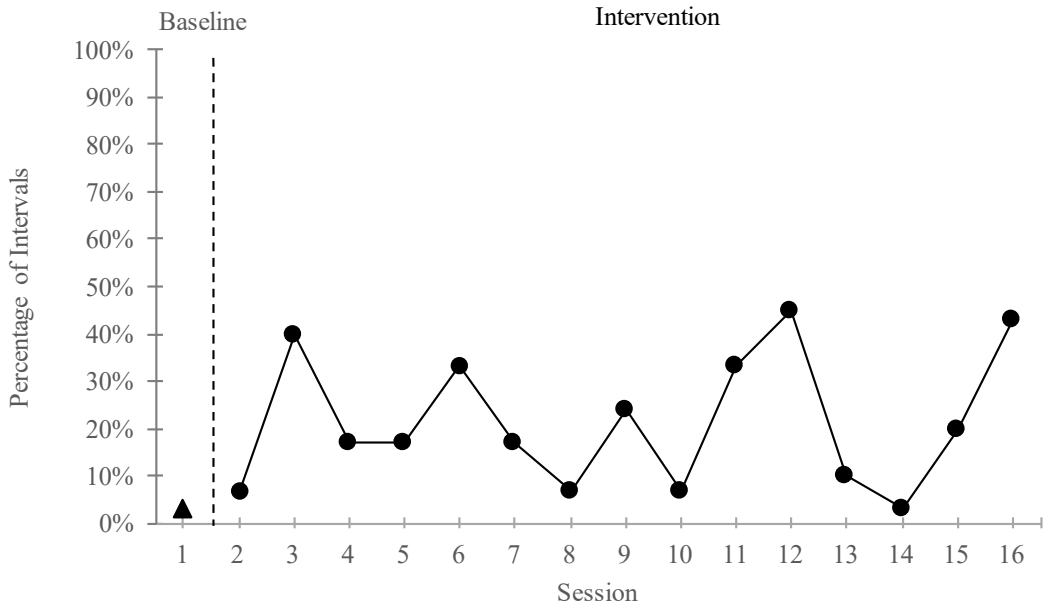

Figure 3. Percentage of intervals in which Sam engaged in prosocial behavior.

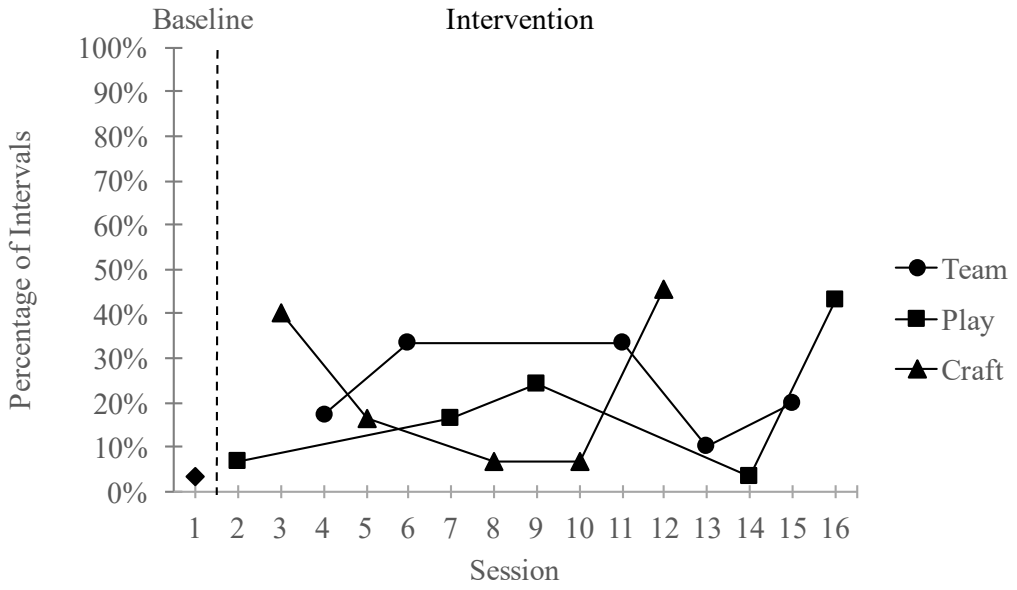

Figure 4. Percentage of intervals in which Sam engaged in prosocial behavior across three instructional activities.

Sarah

Figure 5 displays the overall percentages of intervals in which Sarah engaged in prosocial behaviors. Overall, Sarah engaged in prosocial behaviors at a high level across all sessions, although there was some variability. During baseline, she engaged in prosocial behaviors during 70% of the intervals, leaving little room for improvement during treatment. Prosocial behaviors continued to occur at a high, although variable level, with no evident trend.

When analyzing the data within the treatment phase (Figure 6), there is variability within each of the treatment combinations. When BST was combined with team-based activities, Sarah engaged in prosocial behaviors at a low level, which remained stable for some time, but then the level significantly increased, creating an upward trend. When structured play activities were implemented, Sarah's prosocial behaviors occurred with variability across sessions, but at a level similar to what was observed in the team-based activities. No trends were evident due to the considerable variability. When craft activities were combined with BST, Sarah engaged in prosocial behaviors at a high and relatively stable level. When considering divergence of data between treatment combinations, visually, it appears that there is stable divergence between craft activities and all other activities; but that there is minimal divergence between team-based and structured play activities. When calculating averages within each of the three treatment combinations, the average number of intervals in which prosocial behaviors occurred during BST with craft activities was 68%, for BST with team-based activities, 46%, and for structured play activities, 50%. For Sarah, BST with craft activities elicited more prosocial behaviors then when BST was combined with either team-based activities or

structured play activities. When interpreting the PND (Table 3), effect sizes revealed that craft activities were an ineffective treatment when compared to both structured play and team-based activities. That is, the differences in occurrences of prosocial behaviors between these treatment conditions was negligible. However based on the PND between structured play and team-based activities, there was a moderate treatment effect of the structured play activities; thus, structured play activities are moderately more effective at eliciting prosocial behaviors than team-based activities were.

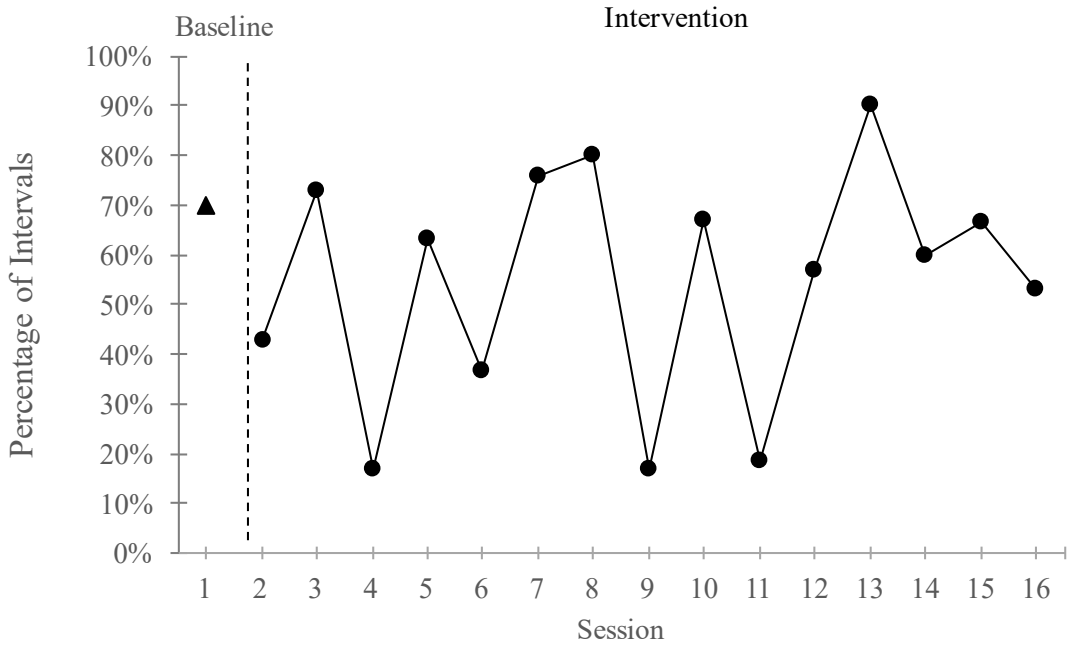

Figure 5. Percentage of intervals in which Sarah engaged in prosocial behavior.

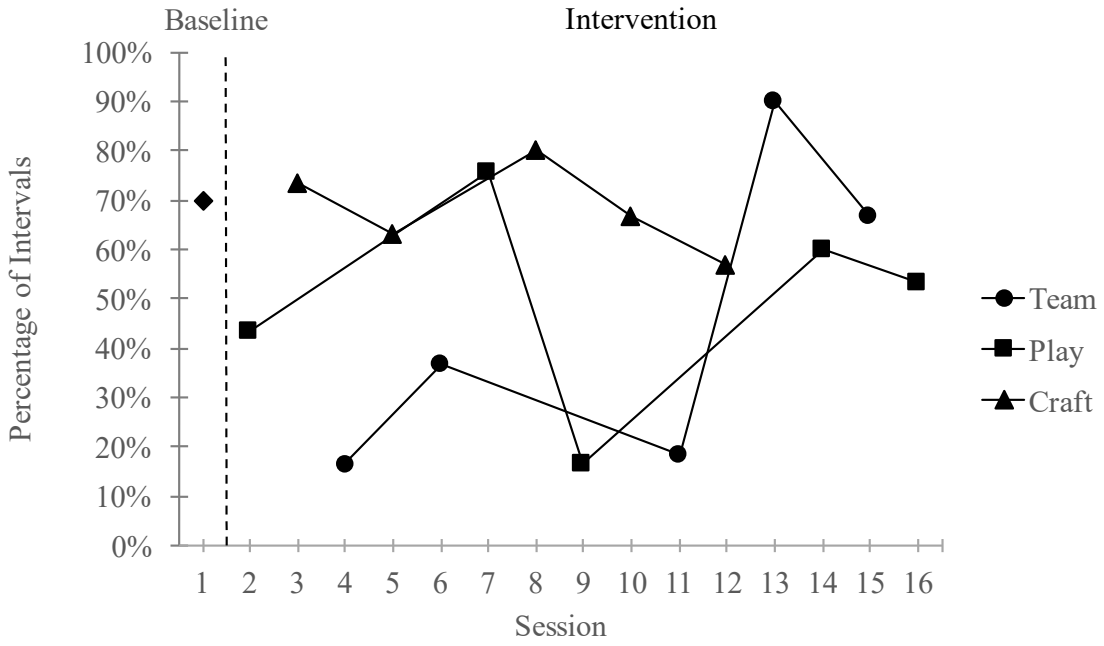

Figure 6. Percentage of intervals in which Sarah engaged in prosocial behavior across three instructional activities.

Wyatt

Overall, as shown in Figure 7, Wyatt engaged in prosocial behaviors during 83% of the intervals during baseline. These behaviors continued to occur at a high, although variable level once treatment was implemented, with no evident trend. When intervention first began prosocial behaviors decreased in level, but increased again to a higher level as sessions continued.

An analysis of the data within treatment (Figure 8) indicates significant variability under each treatment combination; however, the most stability was observed when BST was paired with structured play activities, although this condition was still quite variable. A slight upward trend was observed across the BST and structured play sessions, but due

to variability within other treatment combinations no other trends were observed. Despite the variability, prosocial behaviors continued to occur at a moderate to high level across each of the treatment conditions. When considering divergence, visual inspection indicated that there is a seemingly significant difference in the level of prosocial behaviors between the treatment combination of BST and team-based activities and both BST and structured play and craft activities. Therefore, when Wyatt received intervention using BST and team-based activities, he engaged in less prosocial behaviors than when he received intervention that included either structured play or craft activities. However, there was also significant overlap of data points among the three conditions during the treatment phase. Calculating the average percentage of intervals in which prosocial behavior occurred indicated that prosocial behaviors occurred during 49% of the intervals when BST and team-based activities were used, and during 67% and 70% when structured play and craft activities were used, respectively. Based on the PND calculated for Wyatt, there were moderate effect sizes for the use of craft activities, which indicated that using craft activities was moderately more effective than both structured play and team-based activities at eliciting prosocial behaviors. There were questionable effects detected for the use of structured play activities compared to team-based activities, which indicated that there were not significant differences between those two treatments.

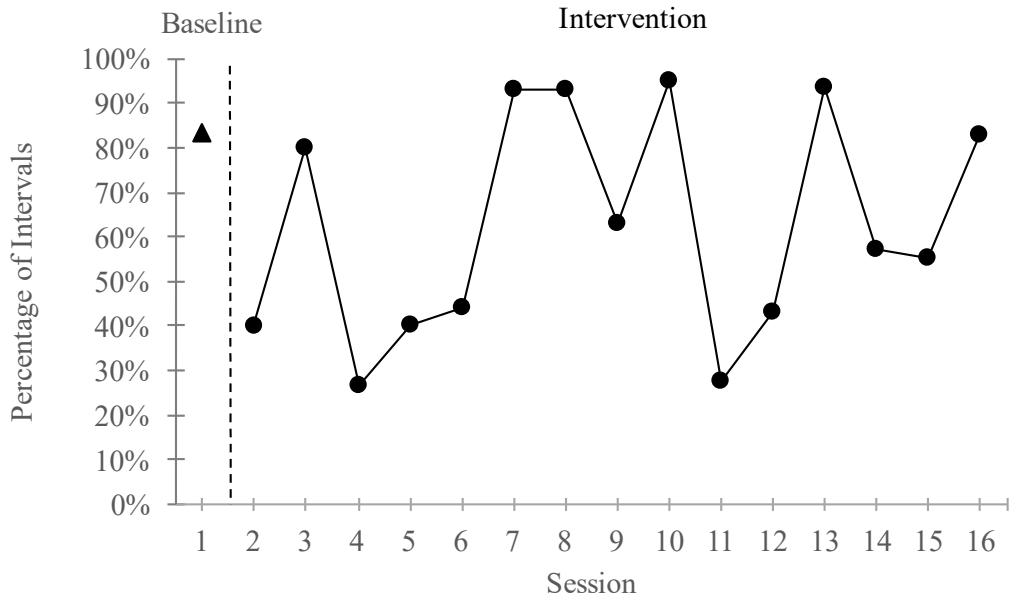

Figure 7. Percentage of intervals in which Wyatt engaged in prosocial behavior.

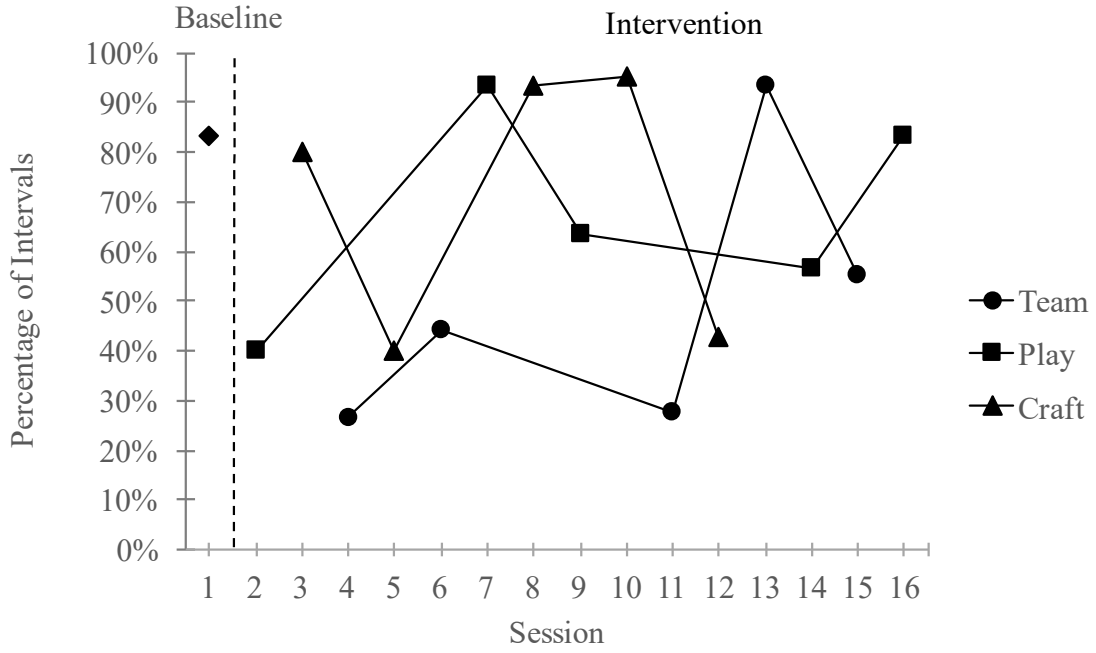

Figure 8. Percentage of intervals in which Wyatt engaged in prosocial behavior across three instructional activities.

Group

While it is beneficial to analyze data on an individual level, considering the effectiveness of treatment for the whole group can also facilitate in the conceptualization of treatment effects. Each participant's percentage of intervals of prosocial behavior was added together and the sum was then divided by four (the number of participants) and multiplied by 100 to determine the percentage of intervals in which prosocial behavior occurred, on average, for the whole group. The graph in Figure 9 shows the group's display of prosocial behaviors across all sessions of intervention, regardless of what specific intervention combination was implemented. In baseline, the group was engaged in prosocial behaviors for an average of 48% of the intervals observed. This number decreased immediately once treatment was implemented, but increased and remained variable across treatment with no clear trend. The level of prosocial behaviors remained moderate across treatment sessions.

When considering differences in prosocial behaviors within the three types of instructional activities (Figure 10), there did appear to be some differences within the treatment phase. When BST was paired with team-based activities, prosocial behaviors occurred at a lower level than when paired with either craft or structured play activities. The most variability was observed when BST was paired with a craft activity; however, there prosocial behaviors were on an upward trend with this activity. Further, two of the three data points that did not overlap with the baseline data point were observed when BST was paired with craft activities, making an argument for the emerging effectiveness of using a craft activity with BST. When assessing divergence in the data (visually), it did appear that craft activities were more effective at eliciting prosocial behaviors than the

other two instructional activities, despite the amount of overlapping data points among treatment conditions. When calculating the average number of intervals in which prosocial behaviors occurred under each of the three intervention combinations, prosocial behaviors occurred under 66% of the intervals when BST was paired with a craft activity, at 43% when BST was paired with a structured play activity, and at 36% of the intervals when BST was paired with a team-based activity. When determining effect sizes of treatments (Table 3) there were questionable and ineffective treatment effects of craft activities when compared to both structured play and team-based activities, respectively. Although visual inspection and a comparison of averages indicated craft activities as a superior treatment, PND found no significant treatment effects for the use of this activity. Moderate treatment effects were detected for the use of structured play activities when compared to team-based activities, thus using structured play activities was moderately more effective at eliciting prosocial behaviors than team-based activities.

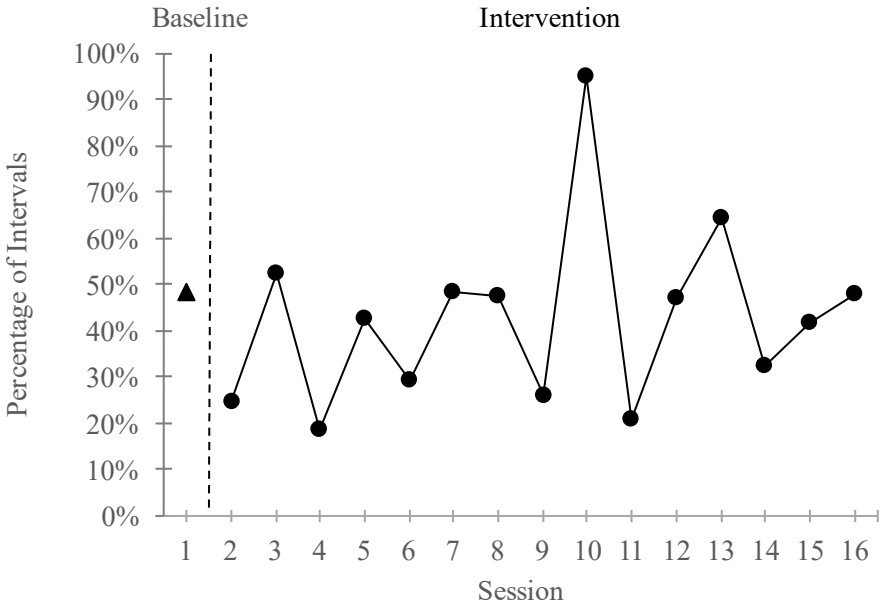

Figure 9. Percentage of intervals in which the group engaged in prosocial behavior.

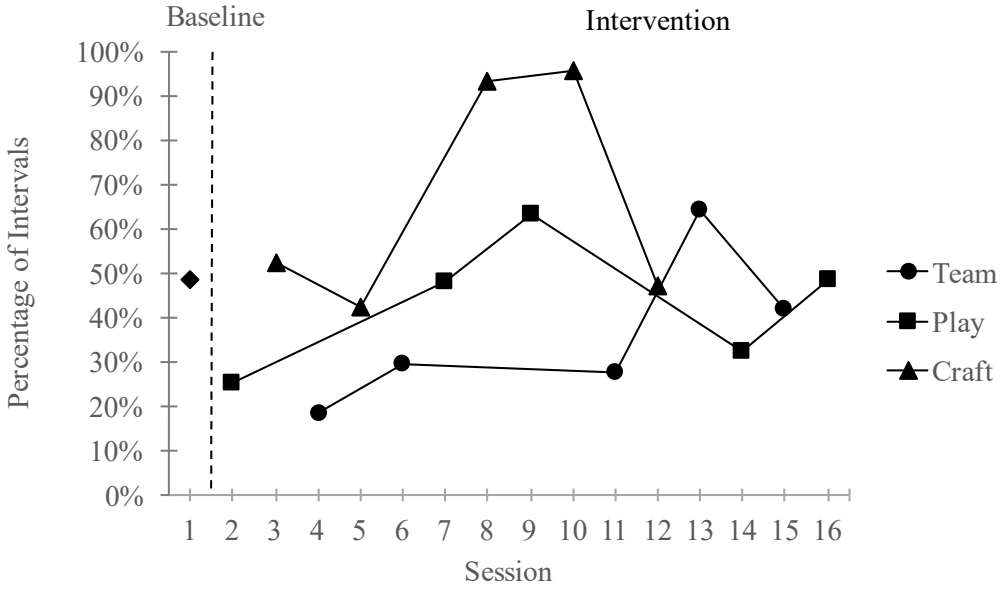

Figure 10. Percentage of intervals that the group engaged in prosocial behavior across three instructional activities.

Maladaptive Behaviors (Research Questions 3 & 4)

In addition to examining the impact of this intervention on prosocial behaviors, additional research questions were included to determine if there were any effects of this intervention on maladaptive behaviors. It is not uncommon for children with social skill deficits to engage in a higher rate of inappropriate social behaviors, disruptive behaviors, or atypical behavior. Thus, the purpose of this intervention was not only to increase appropriate social behaviors, but to also decrease inappropriate behaviors. For the purposes of this study, maladaptive behaviors consisted of the following behaviors: (a) disruption, (b) negative interactions, (c) aggression, (d) tantrum, and (e) atypical behaviors. If any of those behaviors occurred during an interval, it was marked as an occurrence (e.g., a frequency count). The graphs below depict the percentage of intervals in which each participant and the group engaged in maladaptive behavior. PND was also calculated and depicted below in Table 4.

Alice

When considering that Alice engaged in minimal maladaptive behaviors during baseline, there was no real change in these behaviors once intervention was implemented (Figure 11). There were two sessions when Alice engaged in maladaptive behaviors during treatment. The majority of her maladaptive behaviors consisted of atypical behaviors, which for her specifically included stereotypic hand/arm movements (e.g., hand flapping). Since these behaviors occurred minimally across sessions (Figure 12), there were no changes in level and these behaviors remained fairly stable. Finally, since there was significant overlap between treatment combinations (most of which were zero

occurrences of the behavior) no definitive conclusions could be drawn regarding treatment efficacy based on visual analysis. When analyzing PND, team-based activities were considered highly effective at reducing maladaptive behavior when compared to structured play activities. Therefore, Alice engaged in a significantly lower amount of maladaptive behaviors under this condition than all others. However, effect sizes revealed ineffective treatment across all other treatment comparisons.

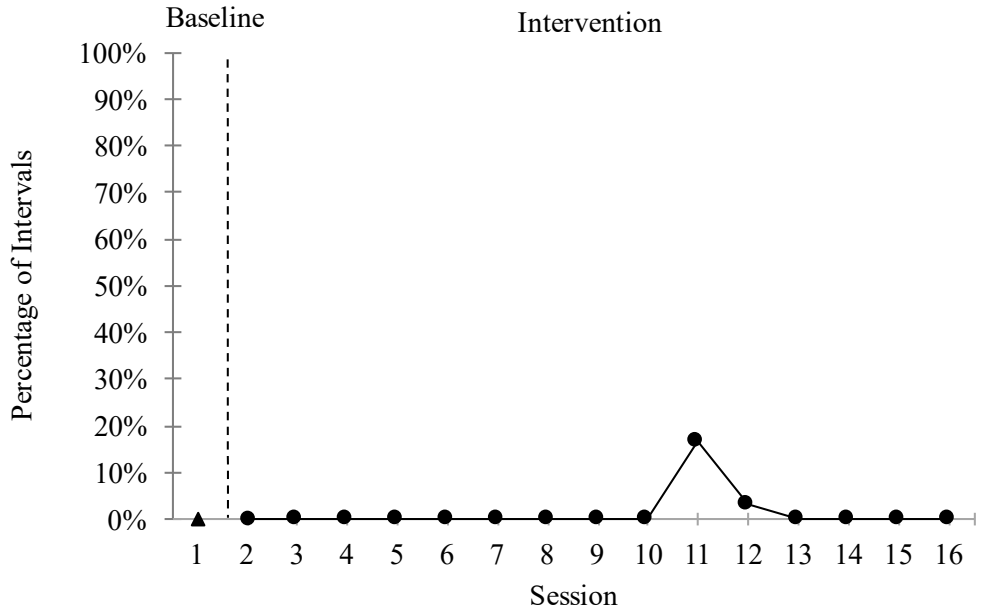

Figure 11. Percentage of intervals in which Alice engaged in maladaptive behavior.

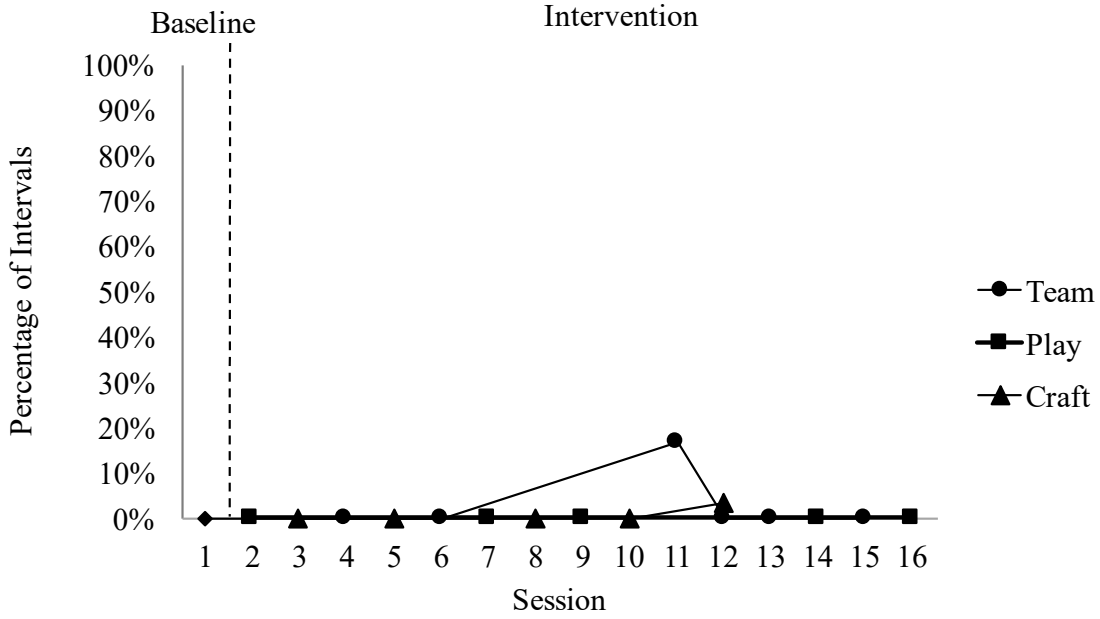

Figure 12. Percentage of intervals in which Alice engaged in maladaptive behavior across three instructional activities.

Table 4 *Effect Sizes-Maladaptive Behavior*

Participant	Comparison	PND	Effectiveness
Alice	Team-Play	100%	Highly Effective
	Play-Craft	20%	Ineffective
	Play-Team	20%	Ineffective
Sam	Team-Craft	80%	Moderate
	Team-Play	80%	Moderate
	Play-Craft	80%	Moderate
Sarah	Craft-Play	80%	Moderate
	Team-Play	80%	Moderate
	Team-Craft	80%	Moderate
Wyatt	Team-Play	80%	Moderate
	Team-Craft	80%	Moderate
	Play-Craft	80%	Moderate
Group	Team-Play	60%	Questionable
	Team-Craft	20%	Ineffective
	Play-Craft	80%	Moderate

Sam

Sam did not engage in any maladaptive behaviors during baseline, but over time as treatment continued, there was an increase in maladaptive behaviors (see Figure 13). While there was an increase in level from baseline to treatment, this could be a result of accumulating demands placed on Sam throughout the day and sessions and not a direct result of treatment alone. There was significant overlap of occurrences and non-occurrences of these behaviors, thus there is no definitive conclusion regarding which instructional activity is most effective at reducing these behaviors. However, when BST was combined with structured play activities, there was a decreasing trend (see Figure 14); but when craft activities were paired with BST, there was an increasing trend in these same behaviors. Thus, it could be argued that for Sam in particular, craft activities were associated with more instances of maladaptive behavior during a free-play setting. However, with such significant overlap within treatment conditions, that should be interpreted with caution. Effect size calculations indicated moderate treatment effects for all treatment comparisons; team activities were associated with moderately less maladaptive behaviors than craft and play activities, while structured play activities were associated with moderately less maladaptive behaviors than craft activities. In Sam's case PND and visual analysis revealed similar conclusions; craft activities should not be used in combination with BST to reduce maladaptive behaviors and that team-based activities are moderately effective at reducing maladaptive behaviors.

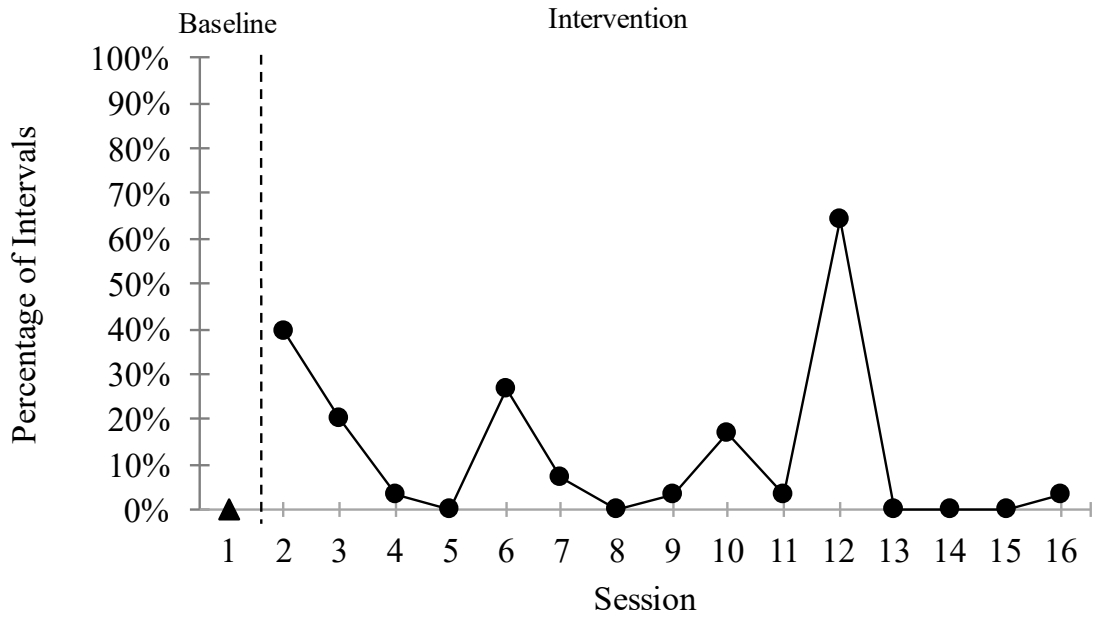

Figure 13. Percentage of intervals in which Sam engaged in maladaptive behavior.

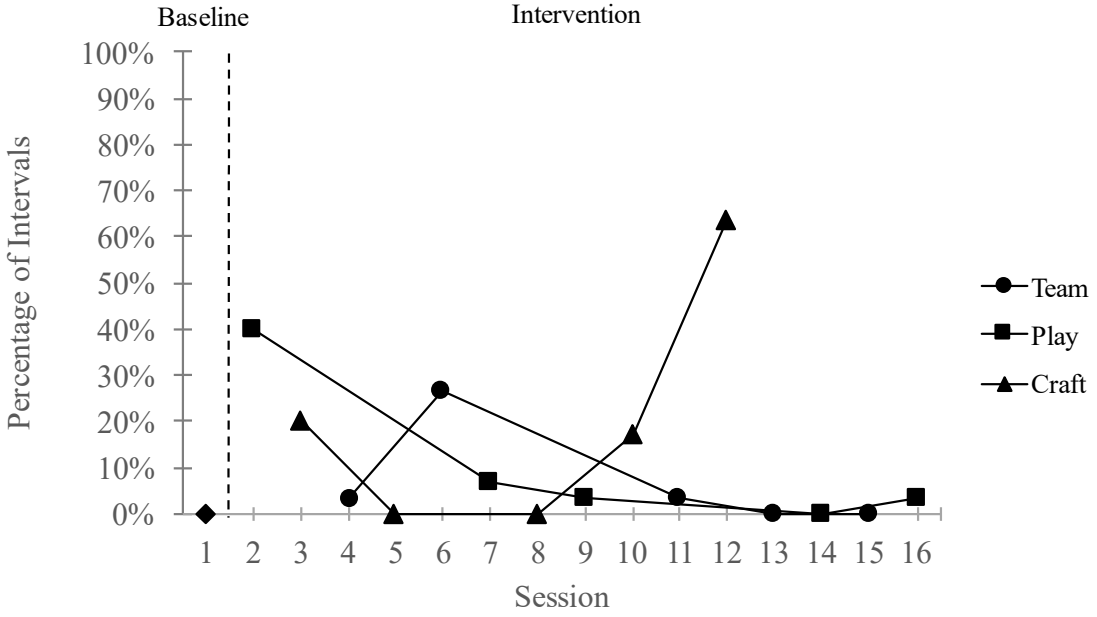

Figure 14. Percentage of intervals that Sam engaged in maladaptive behavior across three instructional activities.

Sarah

Similar to the pattern observed in Sam's data, Sarah also did not engage in any maladaptive behavior during the initial baseline session. Likewise, there was an increasing trend in maladaptive behavior across sessions; but, this could be better explained by the continuation of treatment and demands, as well as the familiarity and decreasing tolerance of continuous demands being placed on Sarah (Figure 15). When considering within treatment effects in Figure 16, the majority of the data points are overlapping and there is no divergence between treatment conditions. Sarah's maladaptive behaviors occurred at a low frequency but increasing in level over time. When BST was combined with a team-based activity, maladaptive behaviors remained consistently low and generally decreased over time. This treatment combination was also associated with the most stability in the data. Similar to previous participants, results were not so conclusive, according to visual analysis. PND (Table 4) revealed that team-based activities were associated with a moderate treatment effect when compared to structured play and craft activities. Incorporating team-based activities was associated with moderately lower levels of maladaptive behavior than other treatment activities. There were also moderate effects of the craft activity when compared to the structured play activity; thus, lower levels of maladaptive behavior were observed during the craft activity condition than the structured play condition.

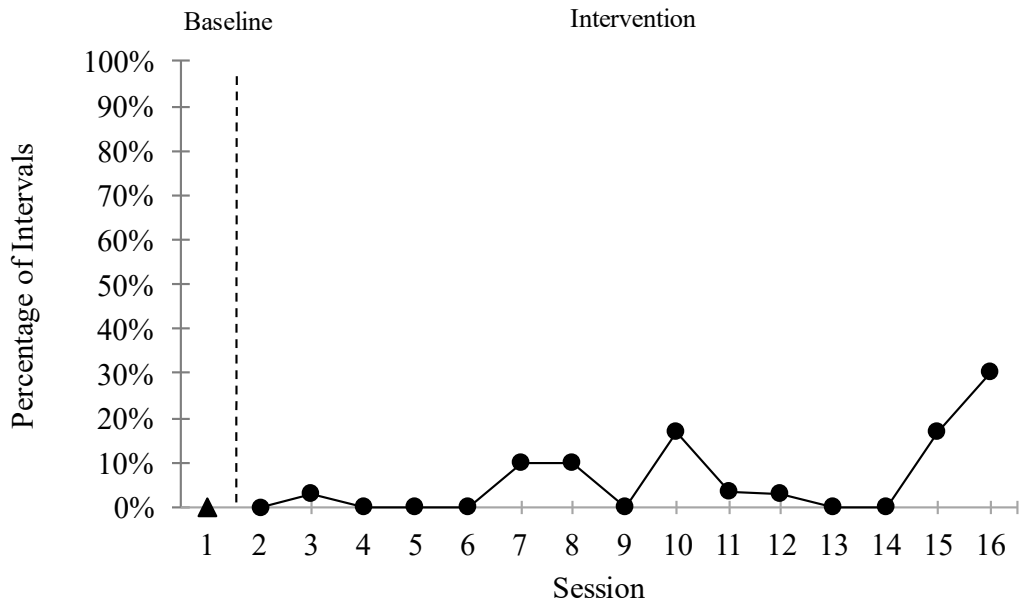

Figure 15. Percentage of intervals in which Sarah engaged in maladaptive behavior.

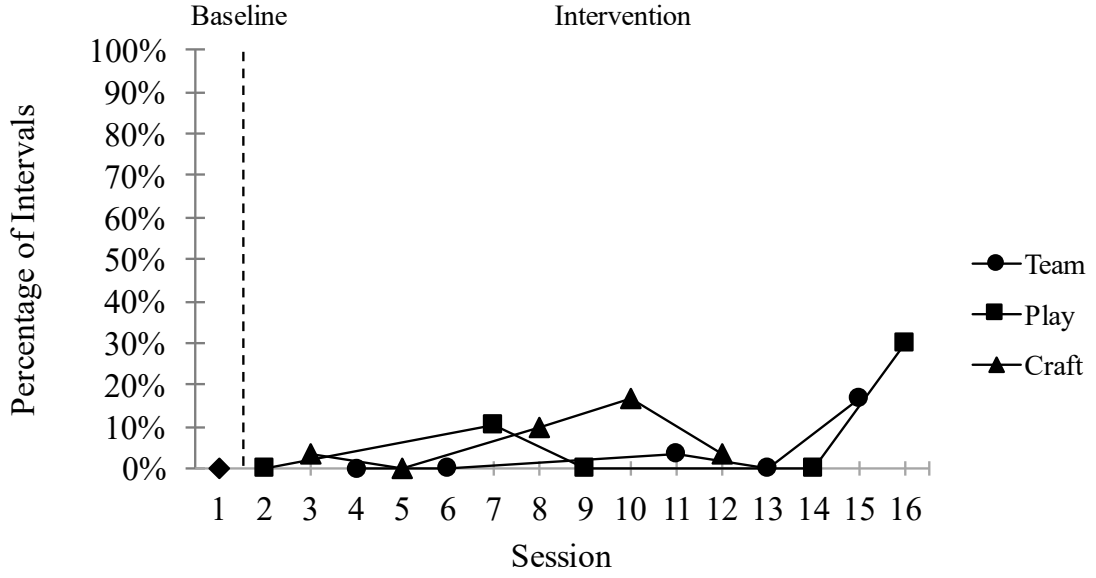

Figure 16. Percentage of intervals that Sarah engaged in maladaptive behavior across three instructional activities.

Wyatt

Wyatt engaged in an overall low level of maladaptive behaviors across sessions (Figure 16). Almost no maladaptive behaviors occurred when BST was combined with team-based activities (Figure 17), which was the lowest level compared to the other two activities. Despite this observation, there was significant overlap within the three treatment combinations; thus, limiting the significance of this difference. Overall, Wyatt's display of maladaptive behaviors was stable and low. But, no argument can be made regarding the use of one activity over another, based on visual analysis. Interpretation of PND (Table 4) indicated that using team-based activities was a moderately effective treatment compared to both structured play and craft activities. Maladaptive behaviors occurred the least often when team-based activities were combined with BST. Moderate treatment effects were also observed when structured play activities were compared with craft activities; thus, craft activities were the least effective at reducing maladaptive behaviors while team-based activities were the most effective, based on PND.

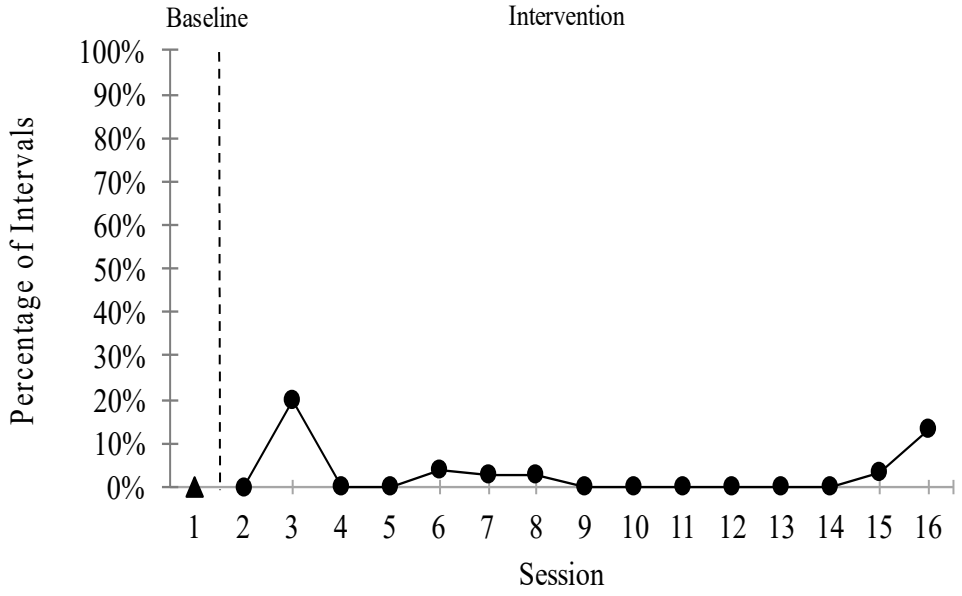

Figure 17. Percentage of intervals in which Wyatt engaged in maladaptive behavior.

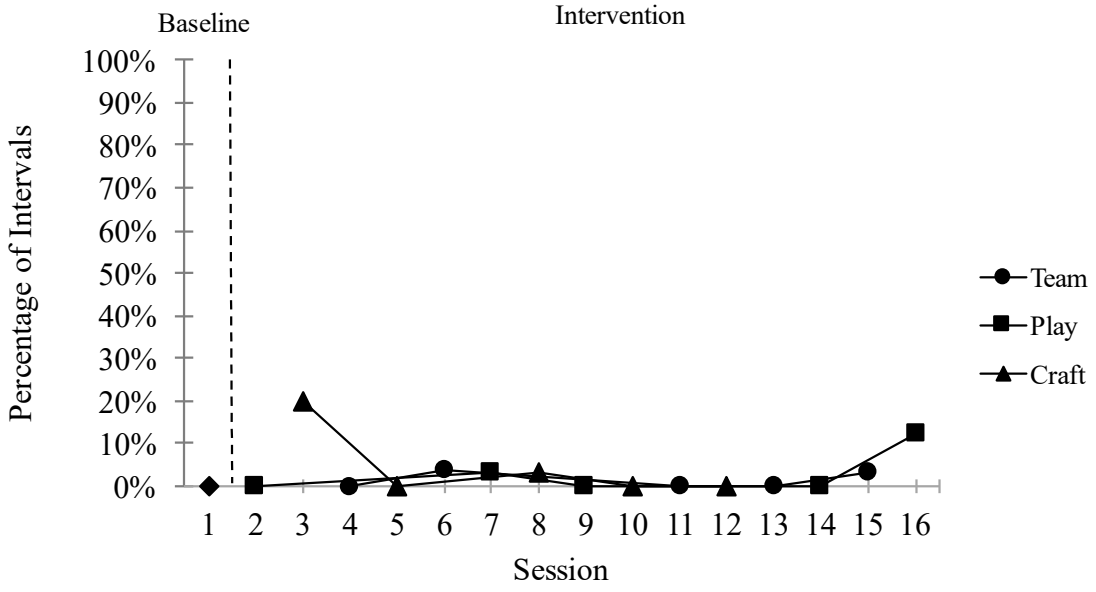

Figure 18. Percentage of intervals that Wyatt displayed maladaptive behavior across three instructional activities.

Group

When considering maladaptive behaviors of the group as a whole, there was no divergence between treatment conditions (Figure 20), as the majority of the data points overlapped. However, there was some variability in the data, which revealed the development of an increasing trend when BST was combined with both craft activities and structured play activities. Much like individual participants' data, since no maladaptive behavior occurred in baseline, it appeared that there was an increase in these behaviors once treatment was implemented. This should be considered with caution because confounding variables were likely impacting the display of these behaviors. Overall, the results for the group as a whole are similar to those that were observed at an individual level for the participants; and, as was reported on the individual level, no substantial conclusions were drawn based on visual analysis. Effect size calculations (Table 4) revealed that for the group, structured play activities were moderately effective at decreasing maladaptive behaviors, when compared to craft activities. While team-based activities were associated with the lowest occurrences of maladaptive behavior, these differences were considered questionable and ineffective when compared to structured play and craft activities.

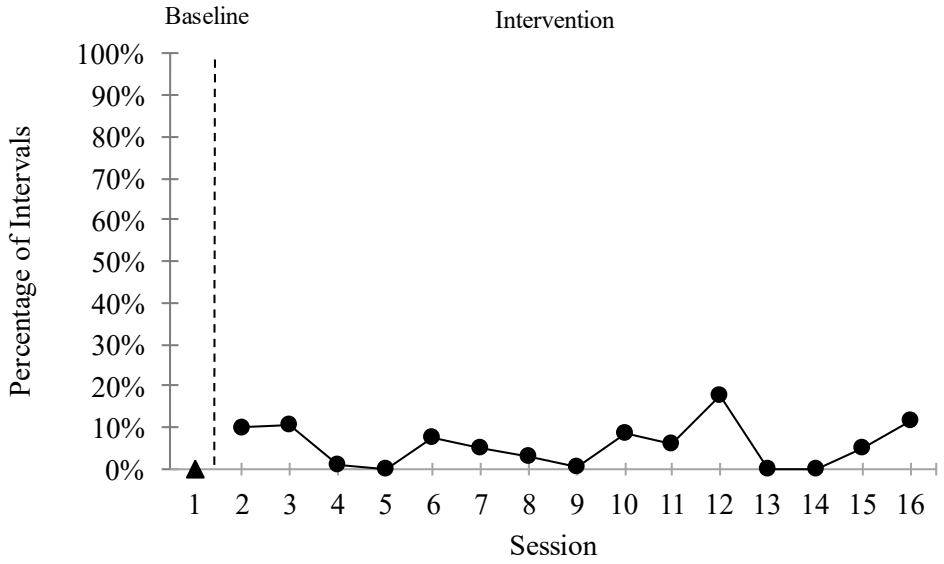

Figure 19. Percentage of intervals that the group engaged in maladaptive behavior.

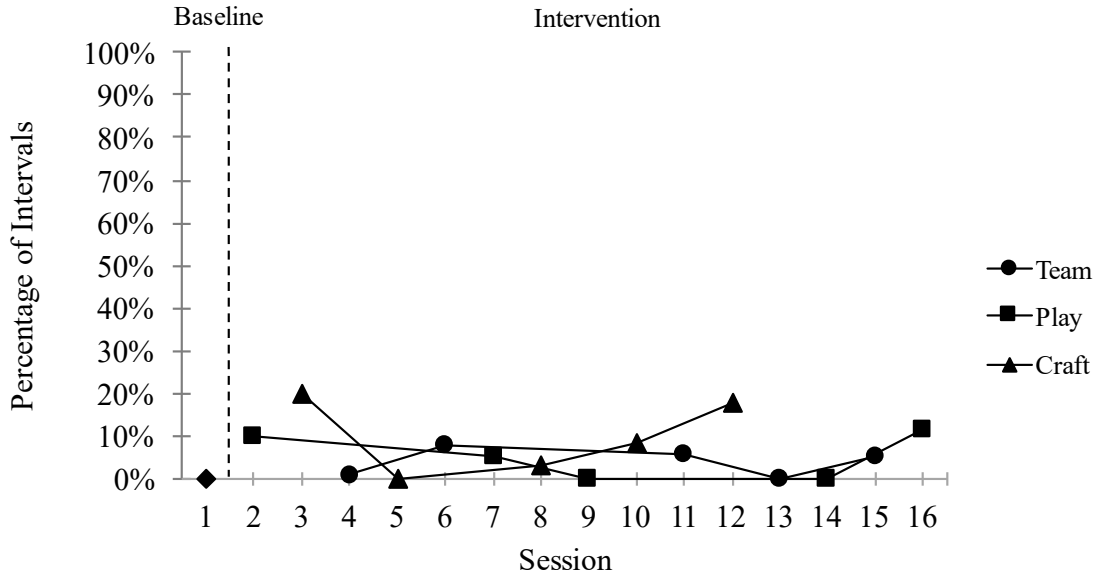

Figure 20. Percentage of intervals in which the group engaged in maladaptive behavior across three instructional activities.

Initiating Conversation (Research Question 5)

In addition to determining if this social skills group intervention impacted prosocial and maladaptive behaviors, the researcher also sought to determine which instructional activity when combined with BST was associated with the highest occurrence of a single social skill: initiating conversation. This was the skill that was taught using BST at each intervention session, regardless of the type of activity that followed. To answer this research question, data were graphed using an alternating treatment design (plus a single baseline session) for each individual participant as well as the group average. If a participant imitated a conversation with either a peer or an adult facilitator during the interval, it was marked as an occurrence. The graphs below depict the percentage of intervals in which each participant and the group initiated conversation with another individual. Table 5, displayed below, indicates the PND and effect sizes for each participant.

Alice

As shown in Figure 21, at baseline Alice did not initiate any conversations. Once treatment began, there was a slight increase in level. Although Alice continued to initiate conversations at a low level, the frequency of this behavior remained stable across sessions. There is not a clear trend, as the behavior remained low across all sessions. There was significant overlap of this behavior among the various combinations of BST and instructional activities. Thus, one particular instructional activity was not associated with a higher occurrence of initiating a conversation, based on visual analysis. When interpreting PND (Table 5), structured play was the only activity associated with a

moderate effect size, as compared to team-based activities. While craft activities were associated with the highest instances of conversation initiation, these differences were not significant enough to result in an increase in meaningful treatment effect sizes.

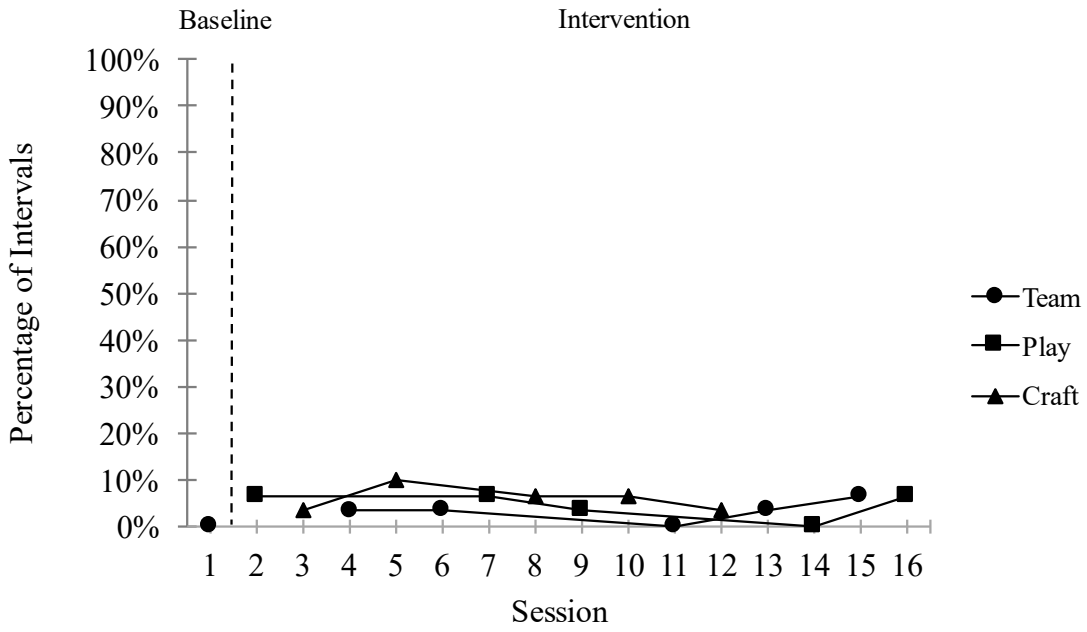

Figure 21. Percentage of intervals in which Alice initiated a conversation across three instructional activity sessions.

Table 5

Effect Sizes-Initiating Conversation

Participant	Comparison	PND	Effectiveness
Alice	Craft-Team	20%	Ineffective
	Craft-Play	60%	Questionable
	Play-Team	80%	Moderate
Sam	Team-Play	60%	Questionable
	Craft-Play	40%	Ineffective
	Craft-Team	80%	Moderate
Sarah	Team-Play	100%	Highly Effective
	Team-Craft	80%	Moderate
	Play-Craft	40%	Ineffective
Wyatt	Craft-Play	60%	Questionable
	Team-Play	60%	Questionable
	Team-Craft	80%	Moderate
Group	Craft-Play	80%	Moderate
	Team-Play	80%	Moderate
	Team-Craft	80%	Moderate

Sam

Sam did not initiate any conversations during baseline and initially when treatment was implemented he still did not initiate any conversations. However, although the data are variable there is a clear increase in the level at which Sam initiated conversations with others once treatment began, which contributed to an overall slightly increasing trend (see Figure 22). Overall, Sam engaged in initiating conversation at a low to moderate level throughout intervention. When considering the divergence of the data between treatment combinations, there was significant overlap. In fact, both the lowest and the highest occurrences of initiating conversation occurred within the same treatment combination. When examining effect sizes (Table 5), treatments were questionable and

ineffective when compared to one another, with the exception of craft activities, in comparison to team-based activities. Craft activities were associated with a moderate effect size, indicating that Sam initiated conversation moderately more under this condition than in the condition when team-based activities were conducted.

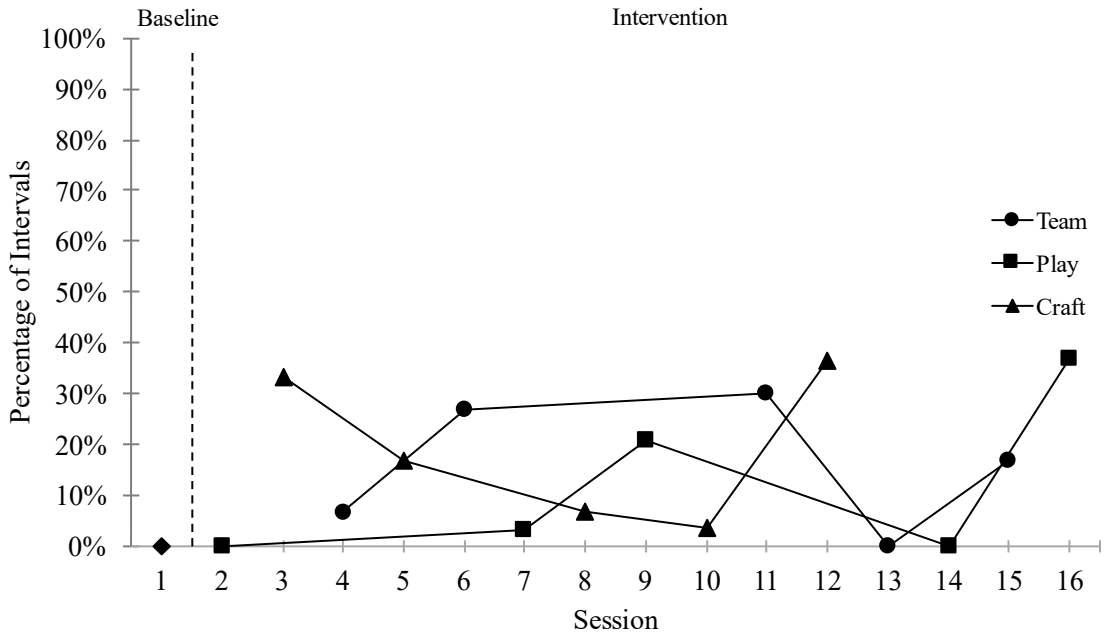

Figure 22. Percentage of intervals that Sam initiated a conversation across three instructional activity sessions.

Sarah

Because Sarah did not initiate any conversation during baseline, there is an overall increasing trend observed in the data across sessions (Figure 23). However, despite this slight increase in trend and level, Sarah continued to initiate conversation at a low level over time. Due to the significant overlap of data across the various instructional activities, divergence was not observed. Across the last few sessions, an increase in the

behavior occurred during one treatment combination but it also increased at the next session even though the instructional activity was different, indicating that the specific instructional activity was not necessarily contributing to Sarah initiating conversations more frequently. The PND between the superior treatment (team-based activities) and structured play activities was 100%, indicating that team-based activities were highly effective at eliciting a higher frequency of conversations than structured play activities were. Team-based activities also had a moderate treatment effect when compared to craft activities, which established team-based activities as the more effective treatment. When structured play activities were compared to craft activities the effect size indicated ineffective treatment, meaning there were no differences in the change of the dependent variable across those two conditions.

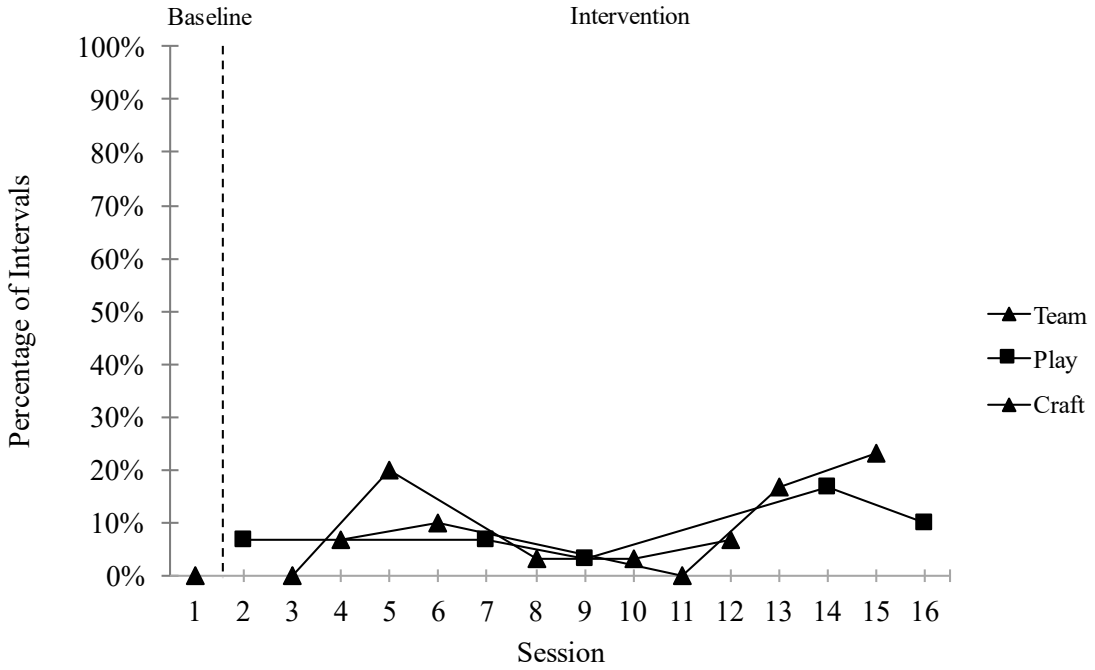

Figure 23. Percentage of intervals that Sarah initiated conversation across three instructional activities.

Wyatt

During baseline Wyatt did initiate conversation, but at a low level. Once treatment was implemented his initiation of conversation slowly increased in level over time, indicating an overall increasing trend in the data (see Figure 24). Although many of the data points overlapped throughout treatment, it can be concluded based on visual analysis that there is a slightly higher occurrence of this behavior when BST was combined with a team-based activity as indicated by the slightly higher level of conversation initiation. However, there was such variability within treatment combinations which contributed to overlapping data points. When examining PND (Table 5) to determine effect size, results are similar to the findings based on visual analysis. A moderate effect size for the use of

team-based activities was found when compared to craft activities, indicating that team-based activities were the more effective treatment for Wyatt. Questionable effects were found for other treatment comparisons, supporting the findings from the visual analysis of the data.

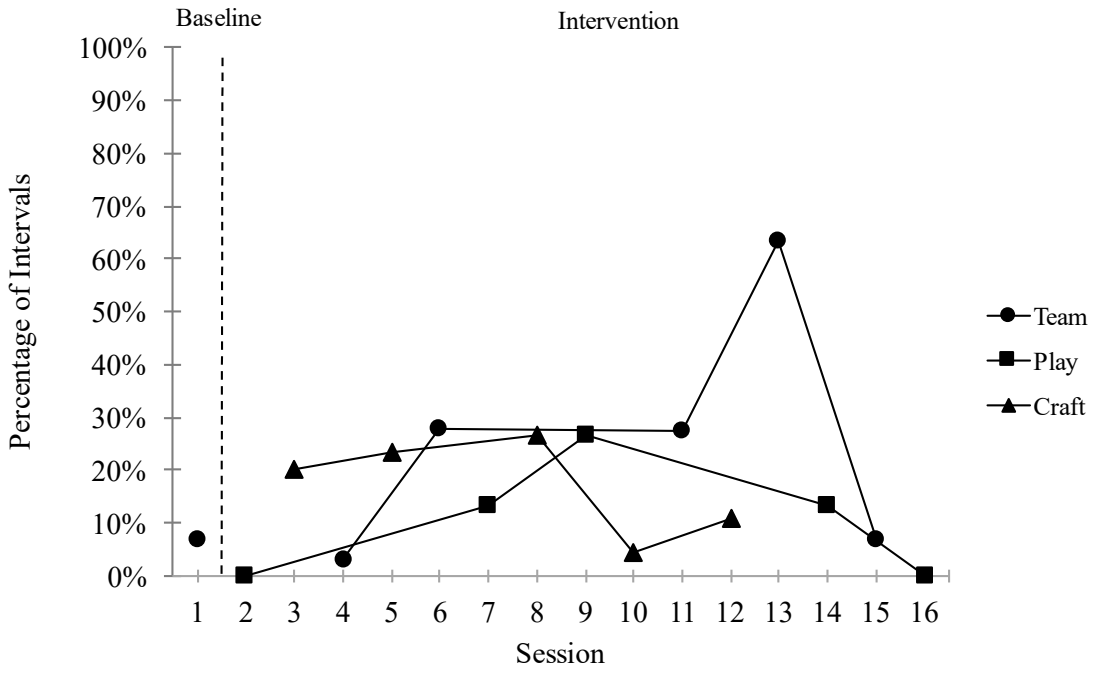

Figure 24. Percentage of intervals that Wyatt initiated conversation across three instructional activities.

Group

Results of the group's average percentage of intervals in which a participant initiated conversation are depicted in Figure 25. As a whole, on average the group initiated conversations at a low and fairly stable level across treatment sessions. Data slightly increased in level from baseline to treatment, creating a slight upward trend.

Based on visual analysis, it appeared that BST combined with team-based activities may result in slightly higher levels of initiating conversation. Only one data point in the BST/team-based activity overlapped with the other activities, indicating that there was slight divergence in this combination from the other two combinations. Effect sizes for the group (Table 5) indicate moderate treatment effects across all treatment comparisons. Team-based activities were moderately effective at increasing the initiation of conversations of the group, when compared directly to structured play and craft activities, indicating that team-based activities are moderately more effective than the other activities used during treatment. Craft activities were also moderately effective when compared to structured play activities, indicating that for the group, structured play activities were the least effective at increasing the initiation of conversations among these participants.

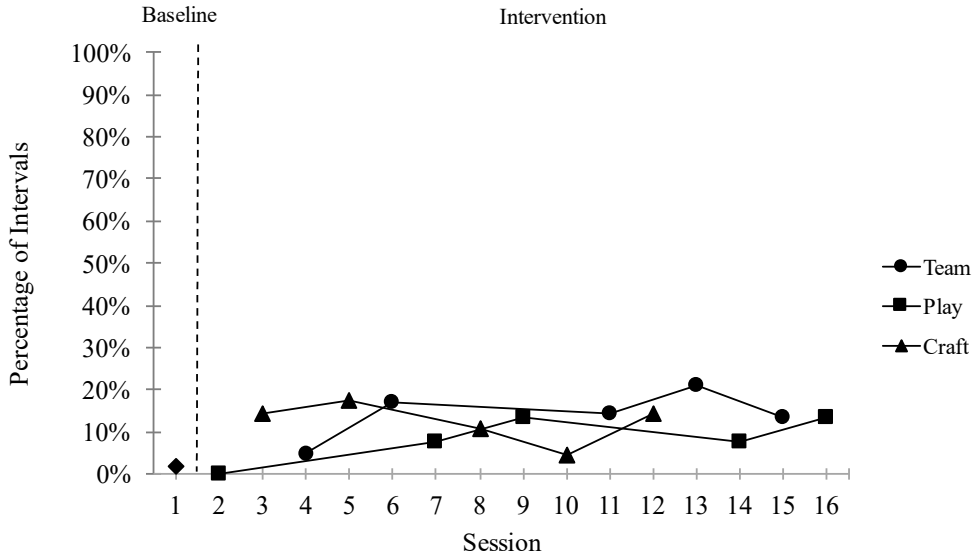

Figure 25. Percentage of intervals in which the group initiated conversation across three instructional activities.

Treatment Integrity

Procedural Integrity

Procedural integrity was collected and calculated for the baseline session, each lesson session, and each of the various instructional activity sessions throughout the study. While group facilitators completed the integrity checklist at each session, an independent, trained observer was present for at least one-third of the sessions to complete an additional integrity checklist for reliability. One hundred percent of the baseline sessions and 40% of the lesson (6 out of 15 sessions), team-based activity (two out of five sessions), craft activity (two out of five sessions), and structured play (two out of five sessions) sessions were observed by an independent observer. For baseline, procedural integrity ranged from 90% to 100%, with the average being 97.60%. For the lesson sessions, team-based activity sessions, and craft activity sessions, all observers indicated that procedural integrity was 100% at all sessions. For the structured play activity sessions, integrity ranged from 88.89% to 100% with the average being 98.89%. Overall, procedural integrity across the sessions remained high (above 90%), indicating that group facilitators consistently followed the protocols of each session throughout the study. Following up on the one structured play session in which integrity dropped to just below 90% revealed that the facilitators did not provide the verbal prompt to let participants know they had 10 minutes left to play their games. While the researcher did address this with the facilitators, that specific step was not considered to be a step that compromised the overall implementation of the intervention or activity.

Interobserver Agreement (IOA)

After the conclusion of the study, several independent, trained raters watched the video recordings of the free-play sessions and completed the observation procedure for data collection. One third of each of the participants' free-play session videos were double coded, thus two independent observers watched and completed data collection for one third of all of the participant's sessions. The overall percentage of IOA for Alice's sessions was 94.97%, ranging from 89.97% to 100%. IOA for Sam's sessions was 97.36%, on average, with IOA ranging from 93.35% to 100%. The average percentage of IOA for Sarah's sessions was 93.87%, and ranged from 88.89% to 100%. Finally, the average percentage of IOA for Wyatt's sessions was 97.91%, ranging from 91.55% to 100%. Overall, IOA remained high across all sessions and all participants. No session ever fell below IOA of 85%, which was the set criterion for this study. Therefore, it can be concluded that observations were conducted reliably across sessions and across observers.

Treatment Acceptability

Treatment acceptability was evaluated by the participants and their caregivers. The child social validity measure required participants to select one of three smiley faces (i.e., a smiling face, a neutral face, a sad face) to indicate the expression of their feeling toward each item being asked. Scores of this measure were calculated by assigning point values to each face; a smiling face was two points, a neutral face was one point, and a sad face was zero points. When asked to respond to the statements, "I liked coming to the group", "I feel like I made new friends in my group", "I learned more about being a

friend or making friends", and "It would make me happy if I could keep coming to this group", all four participants selected the smiling face, indicating that they strongly agreed with these statements. One participant selected the neutral face in response to the statement, "I enjoyed the different things we did during the group", but the other three participants selected the smiling face. Overall, according to participants, treatment acceptability was high, and they endorsed that they enjoyed the group. Furthermore, all of the participants reported that they felt this had helped them make new friends and that they would like to keep attending the group.

At the conclusion of the study, each participant's caregiver was asked to complete and return a modified version of the IRP-15 (Witt & Elliot, 1985). This modified measure, named the Parent Intervention Rating Profile, was created by the researcher in order to determine parents' overall treatment acceptability of this specific intervention. Fourteen items were included in this measure and required individuals to rate how strongly they agreed with the statement using a 6-point Likert scale (i.e., a score of 1 indicated they strongly disagreed with the statement and a score of 6 indicated they strongly agreed with the statement). All items were positively stated; thus, higher scores indicated more agreement, hence higher acceptability. Ideally statements would all be rated as a five or six, indicating that the individual agreed or strongly agreed with the statement. Treatment acceptability data are shown in Table 6.

Table 6

Treatment Acceptability-Parents

Rater	Average Item Score	Total Acceptability Score
Alice's Mother	5.93	83
Sam's Mother	5.50	77
Sarah's Father	5.14	72
Wyatt's Father	5.36	75

Note. Maximum total acceptability score is 84.

The average item score of each rater indicated that parents agreed to strongly agreed with most of the statements in the measure. Further, when considering the total acceptability scores, it can be concluded that parents found this intervention highly acceptable. When considering specific items, Alice's mother agreed that this intervention was beneficial for a variety of children with social skill deficits, that she would suggest this style of intervention to other parents of children with social skill deficits, and that she liked that activities Alice was able to participate in during the intervention. Sam's mother strongly agreed that she would suggest this intervention to other parents of children with social skill deficits, and that this was an acceptable intervention to address her son's skill deficits. Sarah's father strongly agreed that this intervention would be appropriate for a variety of children and slightly agreed that this intervention was consistent with other social skills groups Sarah had been involved in. Wyatt's father strongly agreed that most parents would find this intervention appropriate for addressing social skills deficits and he agreed that this intervention was an appropriate way to decrease Wyatt's social skill deficits.

Taking all responses together, it can be concluded that parents found this intervention appropriate at addressing social skills deficits of not only their child, but for a variety of children with these skill deficits. Further, this intervention was overall very acceptable to them (*M*= 5.48 for each item), indicating that as a whole, parents agreed and strongly agreed with each statement in the measure. It can be concluded that, in the perspective of both participants and their caregivers, this intervention yielded high treatment acceptability.

CHAPTER V

DISCUSSION

Social skills are critical for successful cognitive, social, and emotional development of children (Bellini et al., 2007). Further, appropriate social skills allow children to build and maintain friendships with their peers. Peer relationships not only facilitate social skill growth and social competence, but also contribute to a child's increased communication and language abilities (Kransy et al., 2003). There is no question that social skills are crucial for appropriate development of children, not to mention that social skills in childhood can either help or hinder positive transitions into more complex social skills and behaviors required of adolescence and adults. It is also clear in the literature that social skills deficits can lead to the display of problem behaviors, academic difficulties, and more serious mental health concerns (Francis et al., 2013). Two populations that are heavily impacted by social skills deficits are children with ASD and children with ADHD (Carter et al., 2005; Staikova et al., 2013). Considering the high prevalence rate of these two diagnoses, the number of children who are in need of social skills interventions is high. The literature exploring the effectiveness of a variety of social skills interventions is expansive and has provided a wealth of information for practitioners who are implementing social skills interventions. Although it is clear that strategies based in behavior analytic principles are most effective for children with these diagnoses (Reichow & Volkmar, 2010), it is sometimes difficult to

take these evidence-based strategies and combine them to create a structured social skills group intervention. The literature has comprehensively reviewed many behavioral-based direct instruction strategies for teaching specific social skills (e.g., BST; Kornacki et al., 2013). But, the literature lacks recommendations regarding specific activities for children to participate in while in a social skills group (Jung & Sainato, 2013). While there is some preliminary support for the use of various activities in increasing certain prosocial behaviors (Epp, 2008; Jahr et al., 2000; LeGoff, 2004), these activities have not been evaluated from a behavioral perspective nor have they been directly compared to one another to determine if one type of activity is more effective than another. Thus, the purpose of this study was to fill this gap in the social skills literature by answering the following research questions:

Research Question #1: Does a combination of direct instruction, behavioral skills training, and the opportunity to engage in an instructional activity lead to an increase in prosocial behaviors?

Research Question #2: Which of the three instructional activities (craft, team-based, structured play) is most effective at eliciting prosocial behaviors?

Research Question #3: Does a combination of direct instruction, behavioral skills training, and the opportunity to engage in an instructional activity lead to a decrease in maladaptive behaviors of children with social skill deficits in a free-play setting?

Research Question #4: Which of the three instructional activities (craft, team-based, structured play) is most effective at decreasing maladaptive behaviors?

Research Question #5: Which of the three instructional activities (craft, team-based, structured play) is most effective at increasing the frequency at which participants initiate a conversation during a free-play setting?

Findings from this study could provide practitioners with a new model of social skills group intervention delivery that incorporates more than just direct instruction components. This study could also give direction to the haphazard selection of additional activities that are often included in social skills groups, and may provide some specific recommendations for activities that may be more beneficial for certain individuals than others. Further, the findings of this study will contribute to the existing body of literature on the treatment of social skill deficits (e.g., Gray & Garand, 1993; Kornacki et al., 2013; Kroeger et al., 2007; Sansosti, 2010) while also filling a gap in the literature regarding the types of activities that should be incorporated into social skills groups (Jung & Sainato, 2013).

This chapter will review the findings of this study by answering the research questions, present implications that can be concluded from the results, discuss the limitations of this study, and finally, provide recommendations for future research endeavors investigating this topic.

Overview of Findings

Prosocial Behavior

A primary purpose of this study was to determine the impact this intervention had on prosocial behaviors, which included: cooperative play, helping, initiating conversation, participating/responding to conversation, and gesturing. Not only was the purpose to determine the impact of the treatment, but also to determine which of the three

treatments (i.e., instructional activities) was the most effective at increasing prosocial behaviors for each participant and for the group as a whole. For Alice, Sarah, Wyatt, and the group as a whole, the highest occurrence of prosocial behaviors took place under the craft activity condition; but for Sam, under the team-based activity condition. Despite the higher averages, the effect size of the craft activity was moderate for Wyatt, but questionable and ineffective for the other participants and the group, limiting the effectiveness of the treatment condition and the likelihood that the changes in prosocial behaviors were related to the specific activity used in treatment. For Wyatt, however, the data supported the use of craft activities paired with BST to increase his prosocial behavior. The answer to this research question remains inconclusive for all the other participants and for the group, likely due to the significant variability and overlap within the treatment conditions; indicating that the instructional activity that was implemented did not matter but that they all had a similar impact on the display of prosocial behaviors.

These results contradict what LeGoff (2004) and Owens et al. (2008) found when they implemented a team-based LEGO® building intervention with children ages 6-16. Results from those studies found that participants lengthened the duration of their social interactions while also increasing the frequency in which participants initiated social interactions (LeGoff, 2004; Owens et al., 2008). The increase in prosocial behaviors observed in the current study was more closely associated with the use of craft activities than with the use of team-based activities, which was not what was expected based on the outcomes of previous studies which incorporated team-based activities (i.e., LeGoff, 2004; Owens et al., 2008). In the current study, team-based activities were actually the least effective instructional activity to pair with BST to elicit prosocial behaviors for two

of four participants and the group as a whole. There were differences in the nature of the team-based activity used, as well as the number of peers included in one team. LeGoff's (2004) participants were on teams that were much larger with more clearly delineated roles, whereas participants in this study were paired with one partner and roles were not clearly defined for them. Those differences in group design and structure could have accounted for the differences observed in prosocial behaviors among these participants, who participated in team-based activities in the current study.

It should be noted that the researcher's interpretation of the data and the behaviors observed during this activity indicated that the craft activity itself was not responsible for the increase of prosocial behaviors, but the structure and context of the procedures that were implemented in the session were. The activity itself served as the means to structure the environment in a way that would facilitate the practice of certain prosocial behaviors and skills. When craft activities were implemented, there were a limited number of supplies available and all supplies were located in the middle of the table. Therefore, participants had to ask one another for certain materials if they could not find or physically access them, they had to ask and take turns with materials, and they had the opportunity to talk to one another about what they were going to make, how they were going to make it, and to show one another their projects. It appears that there is some initial, although minimal, support for the use of craft activities in social skills groups when the environment is structured as it was in this study. This adds to the existing body of literature on social skills group interventions, as there is currently no documented use of craft activities with this behavioral skill building structure incorporated into the activity. Literature is limited to the art therapy model, which credits the actual art product

or act of completing a piece of art with a change in behavior (Kuo & Plavnick, 2015; Epp, 2008). In this study, the opportunity for behavioral change was provided by the established structure of the environment when the craft activity was being conducted rather than by the act of completing the craft itself. However, when considering the way this activity was structured, it is similar to how Lifter and colleagues (2005) structured their social skills groups. They allowed participants to engage in play activities as they were set up, while receiving positive social reinforcement for engaging in appropriate social behaviors, which was essentially the nature of this specific activity, as it has less structure and clearly defined goals than the other two activities. Their study found positive results regarding the increase of appropriate social behaviors just by providing positive feedback to children while they were engaging in activities naturally (Lifter et al., 2005), which could explain why there were positive effects on prosocial behavior associated with craft activities.

Maladaptive Behavior

Another purpose of this study was to determine the impact this intervention had on maladaptive behaviors, which included: disruptions, negative interactions, aggression, tantrums, and atypical behaviors. Not only was the purpose to determine the impact of the treatment, but also to determine which of the three treatments (i.e., instructional activities) was the most effective at decreasing maladaptive behaviors for each participant and for the group. For Sam, Sarah, Wyatt, and the group as a whole, the team-based activity sessions were associated with the lowest occurrences of maladaptive behavior. Of those, the effects were moderate for Sam, Sarah, and Wyatt, but were questionable for the group. Alice's results indicated that structured play activities were associated with the

lowest occurrences of maladaptive behavior; but, when examining effect sizes, the treatment was considered ineffective. These results map on well to the previous literature that found that team-based activities were associated with a significant decrease in maladaptive behaviors of individuals with social skills deficits (LeGoff, 2004; Owens et al., 2008). Team-based activities, like those described in LeGoff's (2004) and Owens et al.'s (2008) studies, and those provided for participants in this study gave participants opportunities to engage in sharing, collaboration, and social support of peers. In this study, children with social skills deficits were provided with opportunities to practice these skills with one another, which corresponded to a low frequency of maladaptive behavior under this condition. While this specific activity was not quite as successful at increasing prosocial behaviors, the moderate effect sizes indicate that this instructional activity did in fact have a moderate effect on maladaptive behaviors. While the most robust, and efficient intervention would decrease problem behaviors while also building skills to increase appropriate replacement behaviors (Goldiamond, 1974), this study does show adequate support for the decrease in problem behaviors that are potentially related to social skills deficits. However, these conclusions should be interpreted with caution, as the occurrence of maladaptive behavior across all sessions and most of the participants was quite minimal. Although this makes data interpretation more ambiguous, this does also indicate that this treatment did not induce or elicit maladaptive behaviors for a majority of the participants, which is important to note, particularly for practitioners.

Initiating Conversation

The final purpose of this study was to determine which of the three treatments (instructional activities) had the most powerful impact on the participants' frequency of

initiating conversation with others. This was the specific skill that the group received BST on at each session; thus, the steps of this skill were repeatedly taught and practiced in structured direct instruction sessions preceding each instructional activity and each free-play session. The team-based activity was associated with the highest frequency of initiating conversations for Sarah, Wyatt, and the group, with effect sizes indicating moderate to highly effective treatment. The craft activity appeared to be most effective for Alice, however, PND calculations revealed that the differences were not significant and that the treatment was ineffective. For Sam, his highest frequencies of initiating conversation occurred during craft activities, with moderate treatment effects. Team-based activities, as implemented by LeGoff (2004) were also found to increase the length of conversations as well as the frequency of the initiation of social interactions, which is what was found for two of the four participants as well as the group as a whole.

Sarah and Alice continued to initiate conversation at very low levels despite continued intervention. Wyatt and Sam, on the other hand, initiated conversation at higher levels, although variably, across sessions. An interesting thing to note about Sarah is that she engaged in high levels of prosocial behavior during the study. One of the behaviors included in that set was initiating conversation, which she engaged in minimally. Therefore, the majority of her prosocial behaviors consisted of appropriate play behaviors, such as cooperative play and helping, indicating, that for her specifically, this intervention may have been more appropriate for increasing those types of prosocial behaviors than communication-related prosocial behaviors. It is surprising that despite the continued sessions of BST that taught this specific skill, that participants overall, did not engage in this skill at very high levels. This was surprising when considering the

previously reported effectiveness of BST (Leaf et al., 2010; Matthews et al., 2013) and Skillstreaming (Lerner & Mikami, 2012) at increasing specific social interaction skills. However, these studies reported on data collected during the actual implementation of the intervention, not during a generalized play session, as was the case in the current study (Leaf et al., 2010; Matthews et al., 2013). Had direct observations of behavior been conducted during the actual BST portion of the intervention, results would have looked significantly different in the current study. But, the overall purpose of this study was to determine if treatment effects would be present in a free-play setting similar to what would be representative of free-play in school or at a peer's home. This alludes to a more global critique of social skills treatments, that skills and treatment do not generalize as intended, which could be what has impacted the outcomes of this study (Bellini et al., 2007; White, Keonig, & Scahill, 2007).

Implications

Although the results of this study were not as clear as expected, there are still many implications that can be drawn from the results. Overall, when considering the data from all of the participants' together, this may or may not be an effective structure for use in group social skill intervention delivery. Participants in this study showed variable and low rates of responding, as measured by the dependent variables. Therefore, children with social skill deficits (included in this study) did not necessarily engage in more prosocial behaviors nor did they initiate conversations with others more frequently as a result of one particular instructional activity. Further, different activities impacted dependent variables differently; thus, one type of instructional activity was not all inclusively responsible for creating behavior change across all three categories of

behavior. This is important to note, because this is a model of social skills intervention groups that is frequently used in clinical practice as well as in the school setting. This is not to say that this intervention model should be completely disregarded; but, it is important that further investigation take place before continuing use. This model of intervention delivery has not been investigated in this way before (Jung & Sainato, 2013) so perhaps more research should be conducted before completely ruling out this model of intervention.

What is interesting to note is that this intervention may in fact be more effective for children who have social skill deficits and are on the autism spectrum. The one participant in this study who showed clear increases in prosocial behavior from baseline and the most increase in beginning a conversation did have a diagnosis of ASD. The other three participants, who did not have that specific diagnosis, did not experience as dramatic an increase in these behaviors during this study. Literature suggests that children with ASD benefit from the behavioral strategies that were present across all three activities (i.e., positive feedback, differential reinforcement of alternative behavior; LeGray, Dufrene, Sterling-Turner, Olmi, & Bellone, 2010). Studies have shown significant support for these procedures at decreasing inappropriate behavior even when they are not paired with any type of generalization procedures or naturalistic opportunities to practice the skill (Petscher, Rey, & Bailey, 2009). It could be that the structure, repetition, and use of these evidence-based teaching strategies present across all of the activities implemented provided the right amount of direct instruction while also providing the individual with enough opportunities to respond in a more naturalistic setting. For example, the activities selected for inclusion in this study are activities that

children of this age typically choose to do or are asked to do (e.g., playing a game of Candy Land™, doing an art activity). By providing the differential reinforcement of alternative behaviors to this participant while he was engaged in these various activities provided him with a variety of opportunities to respond and practice engaging in prosocial behaviors that another type of social skills intervention may not provide. This implication fits with what the literature has already shown to be effective in increasing social and play skills in children with ASD (Jung & Sainato, 2013; Liber et al., 2008); that by providing these children with opportunities to learn skills while they are already in a more natural context of play with peers increased appropriate play skills more than when skills were taught and generalized at a later point in time.

Another implication to consider is the role that functions of behavior may have played in each individual's engagement in socially inappropriate or maladaptive behaviors. It was assumed that all of the participants in this study, who lacked developmentally appropriate social skills, did not engage in prosocial behaviors primarily due to a skill deficit, when in reality (considering the results reported) there was likely a variety of additional factors at play that impacted the potency of this intervention. Assessing the functions of individuals' socially inappropriate behavior (which would be present since there are significant social skill deficits) may be important to consider before implementing this intervention in isolation. Research had indicated repeatedly that selecting function-based interventions results in greater behavior change than interventions that are selected arbitrarily (Campbell, 2003; Heyvaert, Saenen, Campbell, Maes, & Onghena, 2014). In the current study, functional analyses were not conducted for any of the participants, therefore, the intervention applied in this study was not

necessarily function based; thus, may not have been as potent for the individual participants in this study.

Another important implication from this study comes from comparing the differences in the impact the intervention had on prosocial behaviors versus initiating conversation. The overall level of the frequency of prosocial behaviors was much higher for participants than the overall level of the frequency of initiating conversation. This was interesting because the specific skill that participants received the BST on was initiating a conversation; none of the prosocial behaviors, other than initiating conversation, were skills that were directly taught during this intervention. This was unexpected primarily due to the vast amount of literature indicating the effectiveness of BST (Leaf et al., 2010; Matthews et al., 2013) at teaching a variety of skills, but specifically, social skills. It could be implied that this model of social skill instruction (pairing BST of a single skill with various instructional activities) may have a more positive impact on appropriate play behaviors (e.g., cooperative play, helping) than on conversation skills, which maps on to what Jung and Sainato (2013) and Liber et al. (2008) reported about the effectiveness of these types of play activities at increasing play skills, specifically (when play opportunities are paired with direct instruction).This also has implications for which parts of this intervention made more of an impact on participants' behavior, that is, that providing opportunities to engage in a variety of structured activities while receiving reinforcement (for playing cooperatively, taking turns, helping others) and corrective feedback (for playing inappropriately) made more of an impact than providing BST for a specific skill. Thus, this intervention may be more appropriate for children who have

social skill deficits that impact their play with peers than for children who have social skill deficits related to social communication skills.

Despite the variable results of this intervention package on prosocial behavior, maladaptive behavior, and conversation skills, the implications drawn from this study are important and can be used to inform practitioners' use of group social skill interventions. Clinicians should strongly consider the incorporation of craft activities into social skills groups in order to increase prosocial behaviors and the use of team-based activities to decrease maladaptive behaviors and increase conversation skills. Further, the implications provide considerations about future research in the area of social skills interventions, as well as add to the body of literature on behaviorally based social skill interventions.

Limitations

Although this study provided information about the effectiveness of a model of social skills group intervention (a combination of BST and different types of instructional activities) as well as addressed gaps in the social skill literature, there are several limitations to the results and implications of this study that are important to consider. Internal validity concerns include limitations that are related to the design of the study, the measurement of variables, and the ability of the design to control for extraneous variables that may have impacted the dependent variable (i.e., prosocial behaviors) more significantly than the dependent variable. That is, how certain is the researcher that the change observed in the dependent variables was a direct result of the implementation of this intervention?

Internal Validity

For this study in particular, one threat to internal validity concerned the prior learning history and previous exposure the participant's had to social skills interventions in the past. In fact, all of these participants were current clients at the university-based clinic that participants were recruited from, and they had participated in behavioral intervention services from clinicians; although not all of the participants had participated in social skills groups in the past. Because of the previous exposure to these types of interventions, increases in prosocial behaviors could possibly be related to the previous experience with these interventions and not with this treatment alone. There were also concerns with the learning history and carry over effects within the implementation of this particular intervention. Because treatment sessions were conducted close in time to one another, carryover effects from the previous treatment combination (e.g., instructional activity) could have played a role in the change of dependent variables in the next consecutive session instead of the actual instructional activity that was implemented in that session. Further, because of the structure of the study and its implementation, behavior problems or issues with compliance and transitions that occurred during the instructional activity or in the transition period could have impacted the participant's behavior in the free-play session, where data collection occurred. Thus, participants' behavior could have been more influenced by external variables that had occurred outside of the free-play session than by the actual intervention being implemented.

Maturation of the participant's over the course of the study could have also impacted the dependent variables measured in this study. As the participants spent more time around facilitator's and one another, they could have naturally become more

comfortable around each other; thus, making it easier and more likely for them to initiate conversations with one another or play with one another. On the other hand as participant's continued to participate in the study, they could have grown bored with the activities or less tolerant of the structure of the study and the demands being placed on them, thus, these types of behaviors could also impact the dependent variables. More specific to the purpose of this study, children with social skill deficits in particular, may not have had a many positive experiences interacting with or being around other children, therefore simply having prolonged exposure to same-age peers with opportunities to interact, converse, and play with may positively impact their social skills as well.

When it comes to the design of the study, a primary internal validity concern is that there was no generalization or follow-up data collected. It could be argued that since the data collection period occurred during free-play time that was relatively un-structured and was designed to look similar to a free-play time in a classroom; this data was collected under a more natural play environment. However, with facilitators present and control being placed over the materials available in the room at each session, it becomes a less naturalistic environment. No attempts to collect data in a more natural environment outside of the clinic were made and no follow-up procedures were conducted. Having a measure of the participant's social skills or conducting an observation of the child a few weeks after the conclusion of the study could have made a stronger argument for the effectiveness of the intervention. Another limitation regarding the design of the study is the use of a momentary time sampling observation for collection of dependent variables. This may have been an underestimation of participants' behavior, which could have impacted the overall results and implications about effectiveness of the intervention.

Finally, the selection of participants for this study could have also impacted the validity of the results. All participants were selected from a population of children who were already receiving behavioral intervention services from the university-based clinic in which the study took place, thus they were already familiar with the facilitators conducting the study and may have also had previous interaction with one another in the clinic prior to the start of this study, which could have impacted the dependent variables.

External Validity

In terms of external validity, there is a concern with the demographic make-up of the participants. While all individuals had social skill deficits, were within the same elementary-age range, and had adequate communication skills, their varying diagnoses and overall presentation may have either minimized or magnified the impact of the intervention. Thus, it could be difficult to determine who the target audience for this intervention would be (e.g., would this intervention be more successful if only individuals with ASD were selected?). Because the results of this study were variable and had a different impact on each participant, it is difficult to be able to say who this intervention would be most appropriate for. Further, two of the participants, Sarah and Wyatt, were biological siblings, which impacts the dynamic and the interactions of not only the two of them, but how they interacted with the other participants. Thus, this is a significant limitation to this study. While a strength of this study is that half of the participants were male and half were female, a limitation is that all four participants were Caucasian and all came from a similar socioeconomic background. This limits how confidently the researcher can claim that this study would be beneficial for children who are not Caucasian and who are not from an upper middle class socioeconomic status.

Another limitation to external validity is the knowledge that the participants had that they were being recorded during the free-play session. Since the sessions were recorded using iPads and laptops, the facilitators had to start the recording devices at the beginning of each free-play session. Therefore, the participants noticed, saw, and would occasionally go up to the laptops or iPads and ask if they could press the record button. Since they knew they were being recorded, this could have played a role in their behavior and how they acted during the free-play sessions, which could have impacted the dependent variables. Finally, the extent to which this study would be effective when implemented in a different setting is a concern. Are the components of this intervention feasible for replication in another setting, like a school, for example? An intervention that is only successful in one setting limits the extent to which it can be implemented by other practitioners. The limitations to both the internal and external validity of this study should be addressed in future research regarding the implementation of this model of social skills group intervention.

Future Directions

This study, despite its limitations and variable results, did contribute knowledge and provided a preliminary examination of the impact that this type of social skills group intervention had on elementary-aged children with social skills deficits. However, with the expanding need for evidence-based group interventions to address social skill deficits in this age group, there is a clear need for more research to be conducted to determine effectiveness of a variety of group social skills interventions. Regarding this study in particular, there are many things that future researchers could modify to further clarify the impact that this intervention has on improving social skills.

Overall, future directions in research should explore alternative research designs and the use of a different population of participants. Although difficult, future research should implement a randomized controlled study with two separate, but similar groups of participants, one group that receives the intervention, and a separate control group that does not receive intervention but only participates in the free-play session. Another option is to separate the intervention components so that one group receives BST plus a team-based activity, a second group receives BST plus a craft activity, and a third group receives BST plus a structured play activity followed by a return to baseline phase and then a re-implementation of the treatment. Separating interventions and providing only one combination to a group and comparing the results across three different groups would reduce carryover effects from the alternating treatment design implemented in this study. Further, implementing a withdrawal phase, where treatment is removed, could potentially make a stronger argument for the effectiveness of the specific treatment combination. Another change regarding the design of the study would be to change the observation procedures and implement a partial interval recording of dependent variables instead of a momentary time sampling procedure. This may overestimate the occurrences of behaviors, but would reduce the concern with the current study's underestimation of the behaviors. Finally, future research should add a generalization and follow-up probe to the procedures to be able to speak to the generalizability and long-term stability of these skills.

Future research should incorporate a different demographic of participants to determine if this model of intervention is more effective for one group of individuals than another. When considering the participants of the study, efforts should be made to focus

more on a particular diagnosis rather than just using the broad criteria of social skills deficits. Based on the PND, the one participant in which this intervention was considered extremely effective for was the one participant in the study who did have a diagnosis of ASD. Future research should incorporate participants who have ASD to see if treatment effects were equally as effective for these individuals. It may be that this model of intervention is more appropriate for this population in particular than with other populations. Further, if narrowing in on a specific diagnostic population, efforts should be made to diversify the race, gender, and socioeconomic status of the participants. Another direction with this line of research is to explore the effectiveness of this group intervention with a broader age range; that is, implementing the intervention in a group of preschool children or with a group of adolescence who have social skill deficits. While results among the population in the current study were variable, the intervention model may be more successful with either a younger or an older group of participants with similar presentations.

Summary

The purpose of the present study was to examine the effects of a model of group social skills intervention that combined BST with three different instructional activities, structured play activities, craft activities, and team-based activities. The impact the intervention package had on prosocial behaviors, maladaptive behaviors, and the specific behavior of initiating a conversation was analyzed. The researcher wanted to determine if this model of social skills intervention was effective at increasing prosocial behaviors and the frequency of initiating conversation while decreasing maladaptive behaviors. Further, a primary purpose was to determine which of the three instructional activities was

associated with the highest increase in prosocial behaviors and the most significant decrease in maladaptive behaviors. Results from this study, based on data collected across four participants, indicated that this may not be the most effective model to use for social skills group interventions, particularly if children are otherwise typically developing or have deficits in social communication. Further, results were inconclusive when it came to determining which activity was most effective due to significant variability and overlap between the three activities. However, there were similar trends emerging across all four participants that indicated that implementing craft activities (specifically in the way these procedures outlined) may be more effective than the other two types of activities at increasing prosocial behaviors. Findings from this study contribute to the existing body of literature on social skills interventions while filling a gap in the literature regarding the use of behavioral based interventions that combine various play activities with evidence based instructional strategies (i.e., BST).

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APPENDIX A

IRB APPROVAL

March 3, 2016

Hallie Smith
Counseling & Educational Psychology
Mailstop 9727
Mississippi State, MS 39759

RE: HRPP Study #16-039: Analysis of Instructional Activities on the Acquisition of Social Skills

Dear Ms. Smith:

This email serves as official documentation that the above referenced project was reviewed and approved via expedited review for a period of 3/3/2016 through 3/3/2017 in accordance with 45 CFR 46.110 #7. Please note the expiration date for approval of this project is 3/3/2017. If additional time is needed to complete the project, you will need to submit a Continuing Review Request form 30 days prior to the date of expiration. Any modifications made to this project must be submitted for approval prior to implementation. Forms for both Continuing Review and Modifications are located on our website at http://www.orc.msstate.edu/humansubjects/forms/.

Any failure to adhere to the approved protocol could r! esult in suspension or termination of your project. Please note that the HRPP reserves the right, at anytime, to observe you and any associated researchers as they conduct the project and audit research records associated with this project.

Please note that the MSU HRPP accreditation for our human subjects protection program requires an approval stamp for consent forms. The approval stamp will assist in ensuring the HRPP approved version of the consent form is used in the actual conduct of research. Your stamped consent form will be attached in a separate email. **You must use the stamped consent form for obtaining consent from participants.**

Please refer to your study number (#16-039) when contacting our office regarding this project.

We wish you the very best of luck in your research and look forward to working with you again. If you have questions or concerns, please contact me at ncobb@orc.msstate.edu or call 662-325-5220.

Final! ly, we would greatly appreciate your feedback on the HRPP approval process. Please take a few minutes to complete our survey at https://www.surveymonkey.com/s/PPM2FBP.

Sincerely,

Nicole Cobb
Compliance Administrator

cc: Daniel Gadke, Advisor

APPENDIX B

SCREENING PROTOCOL AND INCLUSION CRITERIA

Screening Protocol

1. Potential participant has been identified
2. Complete consent forms for participation in the study
3. Sign agreement that lets parent/guardian know that inclusion into the study is not guaranteed, but is contingent upon their child meeting criteria for inclusion
4. Administer demographic form
5. Administer *Vineland-II* Parent/Caregiver Rating Form (Communication Domain only)
6. Administer *SRS-2* Parent Response form
7. Score measures, have measures double scored and verified, and complete participation inclusion criteria table
8. Determine inclusion into the study

Participant Inclusion Criteria

Participant #: _____

Chronological Age: _____ years _____ months

Vineland-II Communication Composite Score: _____

SRS-2 Total Score: _____

Criterion	Meets Criteria	Does Not Meet Criteria
Chronological Age 6:0 to 8:11		
Vineland II Communication Composite Score of 70 or higher		
SRS-2 Total Score of 60 or higher		

Participant Demographic Questionnaire

Child's Name: _____

Parent/Guardian Name: _____

Child's Date of Birth: _____/_____/_____

School Child Attends: _____

Grade: _____

1. Race of Child
   - ☐ African American
   - ☐ Asian American
   - ☐ Caucasian
   - ☐ Hispanic
   - ☐ Native American
   - ☐ Other

2. Gender of Child
   - ☐ Male
   - ☐ Female

3. Parent/Guardian Marital Status
   - ☐ Single
   - ☐ Married
   - ☐ Divorced
   - ☐ Widowed

4. Total number of children living at home: _____

5. What is your child's diagnosis? (Check all that apply)
   - ☐ Autism
   - ☐ ADHD
   - ☐ Anxiety
   - ☐ Conduct Disorder
   - ☐ Depression
   - ☐ Down Syndrome
   - ☐ Hearing Impaired
   - ☐ Intellectual Disability
   - ☐ Oppositional Defiant Disorder
   - ☐ Specific Learning Disability

- ☐ Vision Impaired
- ☐ No diagnosis
- ☐ Other: _____

7. Check the appropriate box below to indicate your child's special education ruling
   - ☐ Autism
   - ☐ Deaf/Blindness
   - ☐ Deafness
   - ☐ Developmental Delay
   - ☐ Emotional Disability (EmD)
   - ☐ Intellectual Disability
   - ☐ Multiple Disabilities
   - ☐ Other Health Impairment (OHI)
   - ☐ Orthopedic Impairment
   - ☐ Specific Learning Disorder (SLD)
   - ☐ Speech/Language Impairment
   - ☐ Traumatic Brain Injury (TBI)
   - ☐ Visual Impairment
   - ☐ None

8. Check the appropriate box below to indicate your child's placement in the school setting.
   - ☐ General Education
   - ☐ Inclusion into General Education with Special Education Support Services
   - ☐ Self-Contained

9. Check all appropriate boxes below to indicate your current areas of concern for your child's skills. Boxes checked indicate a desire to see an increase in your child's skills in that area.
   - ☐ Academics (e.g., reading, math)
   - ☐ Behavior Problems (e.g., tantrums, noncompliance)
   - ☐ Social Skills

10. Below is a list of different items that children enjoy playing with. Please rank these items to indicate your child's 3 most preferred item on this list (i.e., a"1" should be placed by the item that your child would prefer to play with the most).

	Animal toys, Dinosaurs
	Blocks or Legos ®
	Board Games
	iPad/computer/video games
	Playing outside
	Cars, trucks, planes, trains
	Drawing, coloring, crafts

APPENDIX C

SAMPLE DIRECTIONS FOR INSTRUCTIONAL ACTIVITIES

Sample Craft Activity Instructions

Craft Activity #1
Paper Plate Tambourine

Materials:
2 paper plates per participant
1 spool of ribbon
Markers
Stickers
Crayons
Package of Dried Beans
Stapler
Hole Punch

Instructions:
1. Decorate two paper plates
2. Place beans onto one plate
3. Staple the two plates together.
4. Punch holes in the paper plates for the ribbon.
5. Tie ribbons onto the tambourine.

Sample Team-Based Activity Instructions

Team Based Activity #1
Marble Run Design A

Materials:
2 Marble Run Kits
2 Marbles
2 Pictures of Built Marble Run Design

Instructions:
1. Split into 2 teams.
2. Distribute the picture of the marble run design to each team.
3. Instruct each team to work together to create the marble run design as displayed in the picture.

Sample Structured Play Activity Instructions

Structured Play Activity #1
Sneaky Snacky Squirrel™ Game

Materials:
2 Sneaky Snacky Squirrel™ Games

Instructions:
1. Split into 2 teams.
2. Instruct each team to play the game together.

APPENDIX D

BASELINE AND INTERVENTION SESSION PROTOCOLS

Protocol for Baseline Session

Materials Needed:
Snack (Goldfish & Juice boxes)
Poster Board
Sharpie Marker
Construction Paper
Markers

Introductions

1. Group facilitators will introduce themselves. "My name is _____, I am looking forward to meeting everyone today!"
2. Instruct each child in the group to introduce themselves to the others in the group. Provide support to complete the introductions if a child cannot do so independently.
3. Explain the nature of the group sessions and briefly mention and explain the different activities they will get to do across the next few weeks. ("We are all going to meet here twice a week to learn different things about making friends and how to play and get along with our friends. We will have a lesson every time we meet and then we will get to do an activity, sometimes it will be an art project, sometimes we will have to work together to complete an activity and then sometimes we will get to play games, like Candy Land ™ together. At the end of each time we meet we will get to have a free-play time together with different toys.")

Rules

1. Lead the group in a discussion to create 4 rules for the group. Write the rules (stated positively and clearly) on a poster board with a Sharpie.
2. Review the rules written on the poster board by reading them out loud and asking participants to read the rules as well.
3. Hang the rules on the wall and remind the group that these rules will always be posted in the room each week, and they are expected to do their best to follow all 4 rules.
4. Model and roleplay examples and non-examples of the 4 rules for the participants.

Activity

1. Distribute construction paper and make markers available.
2. Direct participants to draw a picture of themselves on the piece of paper and to either list or draw 3 facts or things they want others in the group to know about them. Give some ideas/examples and provide support in completing the activity as needed. Facilitators should complete the activity as well.
3. Share drawings and facts with the group.
4. Provide prompts to facilitate participation as needed.

Snack & Transition

1. Explain to the group that they did a wonderful job following directions and working hard and that they are now going to have snack.
2. Distribute snack.
3. Clean up trash from snack.
4. Explain that the group will now walk to a different room in the building for free-play. Tell the group what toys/activities will be available for them to play with and that they can play with anything available. Remind them that they need to still follow the rules of the group while they play.
5. Move the rules poster and post it in the free-play room.
6. Set a timer and tell participants that when the timer goes off it will be time to go home.
7. Do not require participants to clean up any of the toys.

Craft Activity Protocol

Protocol for Craft Activity (Sample: Paper Plate Tambourines)

Materials Needed:
Sample of Completed Project
Materials for Assigned Craft Activity

Set-Up
Bring in materials needed to complete the project. Place materials in a central location in the treatment room but do not distribute to participant's individually.

Directions
"Today, we are going to make paper plate tambourines."
(Show the completed project, shake it so participants can understand how it works)
"Everything you need to complete the project is right here. Here is how you do it!"
"First, you will color and decorate two paper plates (hold up two plates), then you will place a pile of these beans (pick up a handful) onto the blank side of one of your plates. Then, raise your hand so we can come around and staple your plates together and punch holes around the side of the plate. Then, you will cut off some ribbon and tie it onto the tambourine. If you need help you can ask a friend or raise your hand and we will come help you."
"Go ahead and get started!"

Positive Reinforcement of Target Behaviors
(Facilitators should be familiar with the prosocial behaviors that are being measured via direct observations, as those are the target behaviors)
Each time a participant engages in any of those prosocial behaviors, a facilitator should provide positive, descriptive praise.

Completing the Project
Walk around the treatment room to make sure that each participant is completing the craft activity correctly. Remind and prompt individuals as needed.
"Everyone show me how your tambourines work, shake them!"
"Wow, y'all did a great job completing today's art project! Let's leave them on the table, and we will come around and write your names on them." "Let's go play now!"
(Don't instruct anyone to clean up any materials)

Team-Based Activity Protocol

Materials Needed:
Completed Marble Run Structure as Model
2 Pictures of Completed Marble Run Structure (printed on 8.5" x 11" paper)
2 Marble Run Box Sets with all parts needed to build structure (sets will be in a container)

Directions
"Today, we are going to split into two teams and you will be working together to build this marble run design (point to the model and place marble so it rolls down the marble run)"

"Everything you need to build the design is in the box, and you need to work together to make your marble run look the same as the one built here. We will also be giving you a picture of the marble run design to look at to help you build yours"
"Before you start, this is how you put the pieces of the marble run track together (Show how to connect pieces together)."
"You will have 20 minutes to complete your marble run! Make sure you are working together to get the job done!"
Distribute marble run boxes and pictures of the completed design to each team. Set a timer for 20 minutes.
"Ready, Set, Go!"

Positive Reinforcement of Target Behaviors
(Facilitators should be familiar with the prosocial behaviors that are being measured via direct observations, as those are the target behaviors)
Each time a participant engages in any of the prosocial behaviors, a facilitator should provide positive, descriptive praise.

Completing the Project
Walk around the treatment room to make sure that groups are working together appropriately and that they are understanding how to get started with the design. Remind and prompt individuals as needed.
Give 10 minute and 5 minute time warnings, "You have 5 minutes left to complete your designs"
When the timer goes off, "Times up! Let's see how close y'all were!" (Walk around to the two teams and identify strengths of the marble run designs and praise and applause to each team for their effort and work. Check each marble run by placing the marble at the top of the structure to see what happens.
"Both teams did a great job and worked really well together to build the marble run! Let's go to the play room!" (Don't instruct anyone to clean up any of the materials)

Structured Play Activity Protocol

(Sample: Sneaky Snacky Squirrel™ Game)

Materials Needed:
2 Sneaky Snacky Squirrel™ Board Games

Directions
"Today, we are going to play a game! Today, y'all are going to get to play Sneaky Snacky Squirrel™. Three people Wyatt play at each table. Let's remember to follow the rules of the game and play nicely with our friends."
"If your group doesn't know how to play, raise your hand and we will come show you."
(If nobody in the groups knows how to play, explain the rules and facilitate the beginning of the game)
"I am setting the timer for 20 minutes, and when the timer goes off, it will be time to stop playing. Go ahead and start playing."

Positive Reinforcement of Target Behaviors
(Facilitators should be familiar with the prosocial behaviors that are being measured via direct observations, as those are the target behaviors)
Each time a participant engages in any of the prosocial behaviors, a facilitator should provide positive, descriptive praise.

Completing the Activity
Walk around the treatment room to make sure that groups are playing together appropriately and that they are understanding how to play the game. Remind and prompt individuals as needed.

Give 10 minute and 5 minute time warnings, "You have 5 minutes left to play the game"
When the timer goes off, "Times up!"

"Everyone did a great job playing so nicely together! Let's go play in the play room"

(Do not instruct anyone to clean up the games)

Lesson Protocol

Materials Needed:
Skill Step Labels
Skills Step Visuals
Skill Step Visual Board
Modeling Scenarios List
Roleplay Scenarios List
Rules Poster

Review the Rules
"How is everyone today? Did you have a good day? "
(wait for responses and engage in appropriate conversation)
"Before we get started today let's go over our group rules."
(Point to poster and each rule as it is presented).
"I know you are all going to do a great job following our rules today!"

Introduction to Lesson Topic
"Today we are going to talk about something really important, Beginning a Conversation."
"Who can tell me what beginning a conversation means? "
(Wait for response, prompt for responses and provide a correct explanation)

Skill Step Presentation
"Let's look at the steps to Beginning a Conversation to see how we can do this."
(Present step label for each step one at a time, and pair it with the skill step visual for that step. Read the step out loud as you present the label, and show the visual and explain the visual. Model examples of each step with the other facilitator before placing the step label and visual onto the visual board. Repeat until all steps have been presented.)

Modeling
"Now it's time to practice beginning a conversation. First, you are going to watch me and Ms. _____ practice, then you will get a turn!"
(Roleplay one scenario from each setting on the modeling scenario list provided for today's session.)

Roleplay
"Okay, now everyone pick a partner." (assign partners if needed)
"Each pair is going to practice doing all the steps of beginning a conversation in these different situations." (Read roleplay scenarios out loud, after each scenario, allow each pair to roleplay the scenario, one at a time, and provide feedback and praise to each pair. Continue until all scenarios have been presented.)

Positive Reinforcement & Review

"Everyone did an awesome job practicing beginning a conversation! I really like how everyone followed all the steps! Let's review the steps to beginning a conversation one more time."

(Refer back to and show skill steps with step labels and step visuals as you re-present the skill steps).

"Now, we are going to do an activity!"

APPENDIX E

DATA OBSERVATION SHEET

Observer Name:		Participant #:		Session #:																											
Date: / /		IOA? Y N																													
Time:																															
	30	1 30	2 30	3 30	4 30	5 30	6 30	7 30	8 30	9 30	10 30	11 30	12 30	13 30	14 30	15 30	Total														
Unoccupied Play																															
Onlooker Play																															
Solitary Play																															
Parallel Play																															
Cooperative Play																															
Helping Behavior																															
Initiating Spoken Conversation																															
Participating/Responding to Conversation																															
Self-Talk																															
Gesturing																															
Disruptions																															
Negative Interactions																															
Aggression																															
Tantrums																															
Atypical Behaviors																															
Activity Child Engaged In:																															
Notes:																															

APPENDIX F

LESSON MATERIALS

Skill Step Labels

1. Choose the person you want to talk to.

2. Decide what you want to say.

3. Choose a good time and place.

4. Start talking in a friendly way.

Modeling Scenarios

Modeling Scenarios				
Intervention Session	**School**	**Home**	**Peer Group**	**Community**
1	Tell your teacher that you want to have a turn being the line leader.	Tell your brother or sister what you want to play with together this afternoon.	Ask your friend how their weekend was.	You see a friend at Chikfila.
2	Tell a classmate about the movie you saw over the weekend.	Tell your mom about your day at school.	Tell your friend about the birthday party you went to over the weekend.	Tell the new friend you met at the library about the new video game you just got.
3	Tell your music teacher about the instrument you got to practice over the weekend.	Tell your dad about what happened at football practice.	Tell your friend about your pet.	You see your classmate at the grocery store.
4	You need to talk to your teacher about losing your homework.	Tell your parents about the art project you did at school today.	Talk to your friend about the new video game you got.	You ask the grocery store worker where the milk is.
5	Talk to your classmate about how much homework you had to do last night.	Talk to your parents about what happened on your school field trip.	Talk to your friend about the new toy you got over the weekend.	You see your teacher at church.
6	Tell your teacher about the book you just read.	Talk to your parents about what you did at recess.	Talk to your friend about the vacation you went on.	You see a friend in the park.
7	Talk to your music teacher about how you practiced the piano over the weekend.	Tell your parents about the computer game you were playing earlier today.	Talk to your friend about the place you ate dinner at over the weekend.	You see a friend at the movie theatre.
8	Talk to your friend about working together on a group project.	Talk to your brother or sister about the vacation you all just went on together.	Talk to your friends about the trip you took to the zoo.	You see your school principal at the store.
Modeling Scenarios, continued				

Intervention Session	School	Home	Peer Group	Community
9	Talk to your teacher about what you did over the weekend.	Talk to your brother or sister about your grandparents coming to visit.	Talk to your friends about the new shoes you got over the weekend.	You see a friend at the soccer fields.
10	Talk to your teacher about how much you liked the reading story for the week.	Talk to your parents about how much you enjoyed going to the park with them.	Tell your friend about what you did over the weekend.	You see your friend at Walmart.
11	Talk to your teacher about your summer vacation.	Tell your mom about your new friend at school.	Tell your friend about how your baseball practice went last night.	You see your friend at the pet store.
12	Tell your teacher about your visit to the museum.	Talk to your parents about what you want for your birthday.	Talk to your friend about them coming to your birthday party.	You see your friend at the library.
13	Talk to your teacher about the math test you took yesterday.	Talk to your parents about the test you had at school that day.	Talk to your friend about the new dog you got over the weekend.	You see your classmate at the skating rink.
14	Talk to your teacher about the puzzle you did at home yesterday.	Talk to your parents about the field trip you Wyatt be going on next week.	Talk to your friend about the new movie you saw yesterday.	You see your teacher at the grocery store.
15	Talk to your classmate about the class party you are having next week.	Talk to your brother or sister about what to do for your mom's birthday.	Talk to your friend about what you did at the park yesterday.	You see your classmate at the doctor office.

Roleplay Scenarios

Roleplay Scenarios				
Intervention Session	**School**	**Home**	**Peer Group**	**Community**
1	Tell a classmate about an art project you did.	Tell your parents what happened at school.	Tell a friend what you did over the weekend.	You see a classmate at Walmart.
2	Talk to your classmate about the class party you are having next week.	Talk to your brother or sister about what to do for your mom's birthday.	Talk to your friend about what you did at the park yesterday.	You see your classmate at the doctors office.
3	Talk to your teacher about the puzzle you did at home yesterday.	Talk to your parents about the field trip you Wyatt be going on next week.	Talk to your friend about the new movie you saw yesterday.	You see your teacher at the grocery store.
4	Talk to your teacher about the math test you took yesterday.	Talk to your parents about the test you had at school that day.	Talk to your friend about the new dog you got over the weekend.	You see your classmate at the skating rink.
5	Tell your teacher about your visit to the museum.	Talk to your parents about what you want for your birthday.	Talk to your friend about them coming to your birthday party.	You see your friend at the library.
6	Talk to your teacher about your summer vacation.	Tell your mom about your new friend at school.	Tell your friend about how your baseball practice went last night.	You see your friend at the pet store.
7	Talk to your teacher about how much you liked the reading story for the week.	Talk to your parents about how much you enjoyed going to the park with them.	Tell your friend about what you did over the weekend.	You see your friend at Walmart.
8	Talk to your teacher about what you did over the weekend.	Talk to your brother or sister about your grandparents coming to visit.	Talk to your friends about the new shoes you got over the weekend.	You see a friend at the soccer fields.

Roleplay Scenarios, continued				
Intervention Session	**School**	**Home**	**Peer Group**	**Community**
9	Talk to your friend about working together on a group project.	Talk to your brother or sister about the vacation you all just went on together.	Talk to your friends about the trip you took to the zoo.	You see your school principal at the store.
10	Talk to your music teacher about how you practiced the piano over the weekend.	Tell your parents about the computer game you were playing earlier today.	Talk to your friend about the place you ate dinner at over the weekend.	You see a friend at the movie theatre.
11	Tell your teacher about the book you just read.	Talk to your parents about what you did at recess.	Talk to your friend about the vacation you went on.	You see a friend in the park.
12	Talk to your classmate about how much homework you had to do last night.	Talk to your parents about what happened on your school field trip.	Talk to your friend about the new toy you got over the weekend.	You see your teacher at church.
13	You need to talk to your teacher about losing your homework.	Tell your parents about the art project you did at school today.	Talk to your friend about the new video game you got.	You ask the grocery store worker where the milk is.
14	Tell your music teacher about the instrument you got to practice over the weekend.	Tell your dad about what happened at football practice.	Tell your friend about your pet.	You see your classmate at the grocery store.
15	Tell a classmate about the movie you saw over the weekend.	Tell your mom about your day at school.	Tell your friend about the birthday party you went to over the weekend.	Tell the new friend you met at the library about the new video game you just got.

APPENDIX G

TREATMENT INTEGRITY AND TREATMENT ACCEPTABILITY

Baseline Treatment Integrity Form

Date: **Observer:**

Component	Correct Implementation	
1. Facilitators introduce themselves to the group and instruct group members to introduce themselves, prompt and support as needed	Yes	No
2. Explain the nature of the group session using the script written in the protocol	Yes	No
3. Lead the group in a discussion of 4 group rules	Yes	No
4. Write rules on the poster	Yes	No
5. Hang the rules poster on the wall	Yes	No
6. Model and roleplay one example and non-example for each of the 4 rules	Yes	No
7. Distribute construction paper and markers to participants	Yes	No
8. Instruct participants to draw a picture of themselves and write or draw 3 facts about themselves	Yes	No
9. Facilitators complete the activity	Yes	No
10. Share drawings and facts with the group, prompt and assist as needed	Yes	No
11. Provide global praise for participation in the activity and tell the group they Wyatt be having snack	Yes	No
12. Distribute snack, and clean up trash from snack when finished	Yes	No
13. Explain to the group that they Wyatt now be getting to go play in the free-play room; describe play options as written in the protocol	Yes	No
14. Walk the group into the free-play room, bring the rules poster and place it on the wall	Yes	No
15. Set a timer and instruct the group that when the timer goes off it Wyatt be time to go home	Yes	No
Total # Yes:		

Lesson Treatment Integrity Form

Date:

Observer:

Component	Correct Implementation	
1. Review of the group rules	Yes	No
2. Introduction of lesson topic	Yes	No
3. Read skill step labels one at a time and present with the skill step visuals	Yes	No
4. Place skill step label and skill step visuals on the visual board	Yes	No
5. Explain each step and the corresponding visual	Yes	No
6.Present and model each of the 4 designated scenarios with the co-facilitator	Yes	No
7. Provide instructions on roleplay activity	Yes	No
8. Read the 4 roleplay scenarios out loud and allow time for each of the pairs to engage in the roleplay	Yes	No
9. Provide feedback and positive praise to each pair following their roleplay of each scenario	Yes	No
10. Give global statement of reinforcement about students' performance with practicing beginning a conversation	Yes	No
11. Review all the skill steps, pointing to the skill step labels and visuals	Yes	No
12. Transition into the selected activity (e.g., "Now, we're going to do an activity")	Yes	No
Total # Yes:		

Craft Activity Treatment Integrity Form

Date: **Observer:**

Component	Correct Implementation	
1. Place craft supplies in a central location in the room	Yes	No
2. Deliver directions for the craft activity as written in the protocol	Yes	No
3. Tell the group to begin working on the project	Yes	No
4. Walk around the treatment room and provide verbal praise when participants engage in appropriate prosocial behaviors	Yes	No
5. Provide prompt, instructions, and assistance to participants to facilitate completion of the project	Yes	No
6. Provide a global statement of reinforcement (e.g., “everyone did such a great job making their tambourines!"	Yes	No
7. Deliver transition statement and walk participants to the free-play room	Yes	No
8. Read the 4 roleplay scenarios out loud and allow time for each of the pairs to engage in the roleplay	Yes	No
Total # Yes:		

Team-Based Activity Treatment Integrity Form

Date: **Observer:**

Component	Correct Implementation
1. Read directions as written on the protocol	Yes No
2. Demonstrate how to connect the marble run pieces together	Yes No
3. Tell the group the time they have to build the structure and set the timer	Yes No
4. Walk around the treatment room and provide verbal praise when participants engage in appropriate prosocial behaviors	Yes No
5. Provide prompt, instructions, and assistance to participants to facilitate completion of the marble run	Yes No
6. Provide a 10 minute warning	Yes No
7. Provide a 5 minute warning	Yes No
8. Call "times up" and walk around to the team's structures and follow script provided in the protocol to deliver praise	Yes No
9. Provide a global statement of reinforcement (e.g., “everyone did such a great job working together to build the marble run!"	Yes No
10. Deliver transition statement and walk participants to the free-play room	Yes No
Total # Yes:	

Structured Play Activity Treatment Integrity Form

Date: **Observer:**

Component	Correct Implementation	
1. Read directions as written on the protocol	Yes	No
2. Set the timer and instruct the group to begin playing	Yes	No
4. Walk around the treatment room and provide verbal praise when participants engage in appropriate prosocial behaviors	Yes	No
5. Provide prompt, instructions, and assistance to participants if they do not know how to play the game	Yes	No
6. Provide a 10 minute warning	Yes	No
7. Provide a 5 minute warning	Yes	No
8. Call "times up" and provide a global statement of reinforcement (e.g., “everyone did such a great job playing together!")	Yes	No
9. Deliver transition statement and walk participants to the free-play room	Yes	No
Total # Yes:		

Child Social Validity Measure

I liked coming to the group.	
I feel like I made new friends in my group.	
I learned more about being a friend or making friends.	
It enjoyed the different things we did during the group.	
It would make me happy if I could keep coming to this group.	

Parent Social Validity Measure

Parent Intervention Rating Profile

Directions: **Please read and respond to each statement.**	**Strongly Disagree**	**Disagree**	**Disagree Slightly**	**Slightly Agree**	**Agree**	**Strongly Agree**
1. I believe this was an acceptable intervention for a child's social skill deficits.	1	2	3	4	5	6
2. Most parents would find this intervention appropriate for social skills deficits.	1	2	3	4	5	6
3. This intervention should prove effective in increasing a child's social skill deficits.	1	2	3	4	5	6
4. I would suggest this intervention to other parents.	1	2	3	4	5	6
5. My child's social skill deficits were severe enough to warrant the use of this intervention.	1	2	3	4	5	6
6. I would be willing to enroll my child in another social skills group to continue increasing their social skills.	1	2	3	4	5	6
7. This intervention would not result in negative side-effects for a child.	1	2	3	4	5	6
8. This intervention would be appropriate for a variety of children.	1	2	3	4	5	6
9. This intervention is consistent with those my child has been previously involved in.	1	2	3	4	5	6
10. This intervention was an appropriate way to increase my child's social skills deficits.	1	2	3	4	5	6
11. This intervention is a reasonable way to increase my child's social skills.	1	2	3	4	5	6
12. I liked the procedures and activities my child was able to participate in during this intervention.	1	2	3	4	5	6
13. This intervention was a good way to handle my child's social skill deficits.	1	2	3	4	5	6
14. Overall, this intervention would be beneficial for a child with social skill deficits.	1	2	3	4	5	6

APPENDIX H

MATERIALS USED IN TRAINING

Facilitator Training Outline

Facilitator Training Agenda

I. Overview of Study, Research Questions
II. Discuss Implementation Strategy of Social Skills Camp
III. Discuss Overall Schedule of Each Day
    a. Master Schedule
    b. Room Schedule
    c. Set-Up Schedule
IV. Roles & Responsibilities
    a. Co-Facilitator
    b. Set-Up Person
V. Baseline Session
    a. Review protocols, treatment integrity and materials
    b. Model session
VI. Lesson Session
    a. Review protocols, treatment integrity and materials
    b. Discuss set-up
    c. Model session
VII. Team-Based Activity Session
    a. Review protocols, treatment integrity and materials
    b. Discuss set-up
    c. Model session
VIII. Structured Play Activity Session
    a. Review protocols, treatment integrity and materials
    b. Discuss set-up
    c. Model session
IX. Craft Activity Session
    a. Review protocols, treatment integrity and materials
    b. Discuss set-up
    c. Model session
X. Free-Play Data Collection Session
    a. Discuss set-up
XI. Facilitators Practice
    a. Implement one session together of baseline, lesson, team-based, structured play, and craft
    b. Primary Researcher collects treatment integrity and provides feedback

Facilitator Training Record Sheet

Training Date: _____

Time of Training:_____

Sessions Observed by Primary Researcher	Percentage of Steps Implemented Correctly
Baseline	
Lesson	
Team-Based Activity	
Craft Activity	
Structured Play Activity	

Facilitator Trained:_____

Observer Training Agenda

I. Overview of Study, Research Questions

II. Discuss how data were collected and recorded and how video files are organized
   a. Dropbox link emailed
   b. Check that everyone can and has access to the video/links on their computer, and that they work

III. Observation System
   a. Momentary Time Sampling…what does this mean?
   b. Overview of behaviors for observation
   c. Present operational definitions charts
   d. Distribute sample of data sheet

IV. How to Conduct these Observations CORRECTLY
   a. Explain 3 seconds of momentary time sampling
   b. When to start/stop for observation purposes
   c. Intervals App on phones
   d. Modeling Observation with Volunteer

V. Who is Who and Who Am I Observing?
   a. Participant Overview-show which participant is which and give brief background
   b. Distribute chart with assignments, highlight your name everywhere that it appears!
   c. Deadline to code videos and email Hallie completed observation sheets

VI. Quiz (Operational definitions of behaviors and observation system)

VII. Time to Practice
   a. Practice all together, guided practice
   b. Practice all together, work alone/individually
   c. Practice one last time (or until we are at 90% IOA with one another)

Completing Direct Observations Handout for Observers

HOW-TO COMPLETE OBSERVATIONS

1. Begin the Intervals App for 15 minutes once Hallie or another facilitator on the recording comments that the timer is starting.

2. The last 3 seconds of each 30-second interval, look up and record exactly what the child is doing. Remember that multiple behaviors can be included within that 3-second interval, PLEASE be sure to catch and record them ALL!

3. Mark the occurrence by placing a check or a dash or a clear mark of some sort in the correct box associated with the interval.

4. At the end of the 15 minutes, you can stop the recording. There is 20 minutes of recording because their free-play time was 20 minutes, but you will stop recording at the end of minute 15.

5. PLEASE be sure to complete all the information at the top, including your name, the participant that you observed, and the session. Please use the session number given on the table with your assignments so that we are all referencing the same session.

6. Circle "yes" for IOA if you are listed second on the assignment for that session.

Assessment of Training for Observers used for Data Collection

Name: _____

Primary Researcher: _____

Date: _____

TOTAL SCORE: _____

1. How do you conduct a momentary time sampling observation?

2. How do I know when to start my observation, what is my cue from the video recordings?

3. What are the three categories of behaviors included in this observation?

4. Give the operational definition for cooperative play and an example that would be coded as "cooperative play".

5. Give an example of something a child could do that would be considered a "negative interaction".

6. Explain the differences between unoccupied play and parallel play, based on the operational definitions used for this study.

7. What is the operational definition for "atypical behavior"?

8. Can multiple behaviors be counted as occurring within one interval?

9. What is the operational definition used for "helping" and what is an example of a child engaging in this behavior?