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**THE EFFECTIVENESS OF THE TEACHING INTERACTION PROCEDURE FOR  
YOUNG CHILDREN WITH DEVELOPMENTAL DELAY**

By

Bailey Swain

B.S., Northwestern College, 2019

A Dissertation Submitted in Partial Fulfillment of  
the Requirements for the Degree of Doctor of Philosophy

Division of Counseling & Psychology in Education

School Psychology Program  
In the Graduate School  
The University of South Dakota  
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## ABSTRACT

Developmental Delay (DD) is an IDEA classification for young children who fail to meet developmental milestones at typical times. Young children with delays in social or emotional development may show deficits in social skills. Noting the importance of early intervention, identifying effective social skills interventions for children aged 3-5 is essential. Kopp et al. (1992) note the differences in social skills between preschoolers with DD and typically developing peers. This study investigated the effects of the Teaching Interaction Procedure on skill acquisition and generalization to a free play activity in the general education classroom.

Dissertation Advisor

A handwritten signature in black ink, appearing to read "KATE HELBIG", written over a horizontal line.

Dr. Kate Helbig, PhD

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## **Chapter 1**

### **Introduction**

#### **Developmental Delay**

Developmental Delay (DD) is a broad category that encompasses individuals, particularly young children, who fail to meet developmental milestones within specified time frames. Some examples of typical milestones that occur between the ages of birth to five are sitting up on one's own, using gestures to communicate, copying what others do during play, and noticing when others are hurt or upset. Milestones that are typically missed or are more obvious to caregivers are walking, a delay in speaking first words or phrases, and toilet training (CDC, 2008; CDC 2020). DD can be seen in a variety of contexts such as Autism Spectrum Disorder, speech and language delays, preterm infants, and certain genetic disorders (Cathey & Holden, 2009; Marlow et al., 2019; Mirzakhani et al., 2020). When children are diagnosed with Developmental Delay, they are typically identified as toddlers, including children aged 3 and younger. However, a large percentage of children with symptoms of DD may not be identified as being delayed due to a lack of knowledge about typical milestones, concern about reporting milestones to pediatricians, or dismissal of concern by a doctor (Scherr et al. 2020). Child Find, a system set in place by the Individuals with Disabilities Education Act (IDEA) to identify, evaluate, and provide services for all children who have a disability, can be used to identify young children with Developmental Delay (IDEA Sec. 300.111, 2011).

Developmental Delay, under IDEA, is a recognized disability among children ages three through nine who experience a delay in one or more areas of development including physical, cognitive, communication, adaptive, and social-emotional development (IDEA Sec. 300.8, 2011). As with other disabilities, it is important to note that developmental delays fall on a

spectrum, with individuals experiencing a wide range of symptoms or long-term outcomes. In order to qualify for special education services under the category of Developmental Delay, a child must be 1.5 standard deviations below the mean in two or more developmental areas; it must also have an adverse effect on the child's educational performance (IDEA Sec. 300.111, 2011). This contrasts with receiving a medical diagnosis of Global Developmental Delay, which requires that either a child's overall development occurs slower than average, development occurs consistently slow in one area, or development stops or regresses overall or in specific areas (Yale Medicine, 2022). This diagnosis is reserved for children under the age of five; this diagnosis does not require the administration of a standardized cognitive assessment as children below the age of five who exhibit developmental delays may be unable to partake in these assessments (American Psychiatric Association, 2013). Like the variety of developmental delays that can occur within the population, there are a multitude of causes associated with developmental delays. The use of nicotine, drugs, or alcohol during pregnancy, infection during pregnancy, genetic factors, low birth weight, premature birth, and other complications during pregnancy, birth, or shortly following birth can all be causes of a DD in children (Centers for Disease Control [CDC], 2020).

The physical development of children typically occurs in stages, which are organized by age (First and Palfrey, 1994). For example, crawling typically occurs by nine months and walking alone by eighteen months. Other milestones that are included in physical development include rolling from front to back (6 months), pulling to stand (8 months), and using a spoon unassisted (18 months). It is important to note that this is not an exhaustive list of physical development milestones, as many occur between birth and age 5 (Zubler et al., 2022). Several areas of deficit that may be seen in a delay in physical development include difficulty with gross

and/or fine motor skills and sensory sensitivity behavior. This may look similar to the sensory seeking or sensory avoiding behavior seen in individuals with Autism Spectrum Disorder (Lu et al., 2019).

Cognitive development can also be impacted by a developmental delay. Cognitive development can be defined as the development of one's intellectual abilities. Some examples include problem-solving, learning, and making sense of the world around them (Piaget, 1964). Because of this, it can present as an intellectual disability, especially once the child is school-aged (Kirk et al., 2017; Voigt et al., 2006). However, a general delay in cognitive development can occur and can be seen as early as eight to nine months, when object permanence typically develops. Object permanence can be defined as a child's ability to understand that objects still exist when no longer in sight (Wood et al., 1980). A lack of developing an understanding of cause-and-effect relationships can also be a sign that cognitive development may be delayed in a child. However, children should be evaluated using formal assessments as the child ages to determine if the delay in development will lead to a lasting intellectual disability after age nine (First and Palfrey, 1994).

Developmental delays can also occur in the area of speech and language. Language deficits and difficulties with communication have been identified by looking at both expressive and receptive language, as well as the environment in which the child is learning language. Because there is a critical period for learning language and communication, a delay in this area of development is integral to providing services within the critical learning period (First and Palfrey, 1994). If intervention falls within the critical learning period, research has shown that some children may reach typical age-appropriate language in early childhood following initial low scores, while others continue to get low scores from screeners (Hentges et al., 2019).

Adaptive development refers to the gaining of skills relevant to taking care of oneself or utilizing life skills independently. Examples include being able to follow a routine, feeding oneself, getting dressed, toileting, and asking for help (Bailey, Burchinal, & McWilliam, 1993). A delay in adaptive behavior is typically seen in concurrence with delays in other areas, as opposed to a delay in adaptive behavior alone (Estes et al., 2015). Adaptive skills may show greater variety when they are achieved by children. However, a continued delay or lack of adaptive skills is seen in children with an intellectual disability. Not all children with a lack of adaptive skills have an intellectual disability (Thurm, Kelleher, & Wheeler, 2020). Children with severe behavioral difficulties have also been shown to have lower levels of adaptive functioning, making intervention in this area essential at a young age (Balboni et al., 2020).

A delay in social and emotional development can be seen as early as infancy. Sleep disturbances, extreme fearfulness, and overexcitability can be signs that indicate a delay in social or emotional difficulties in childhood. However, one concern should not lead to a diagnosis of Developmental Delay, as several indications or symptoms should be present. It is important to note that while all children can exhibit problem behaviors at times, the severity, duration, and quantity of the behaviors should be considered when determining if a delay in social-emotional development has occurred. Preschoolers and older children with delays in social or emotional development may show impulsiveness, hyperactivity, fearfulness, or apathy; ADHD has also been found to be comorbid with DD (First and Palfrey, 1994; Lyall et al., 2017). While some children with a delay in social development may naturally reach a level of age-appropriate functioning, some children continue to exhibit lower levels of social skills without intervention (Guralnick et al., 2007; Guralnick, 2010)

## **Social Skills**

Social behavior is defined as actions that are taken in order to interact with other individuals. It can serve a variety of purposes, many of which fall under the context of creating and maintaining relationships through the ability to “adapt to their environment through verbal and nonverbal communication” (Matson, Matson, & Rivet, 2007). The development of appropriate social skills is essential to success in a variety of contexts in all stages of life. Certain social skills are typical for young children without developmental delays. Three- to five-year-old children who are typically developing learn to appropriately interact with peers and adults in order to effectively function in their environment; this includes school and home settings where both play and work would be present (Hay et al., 2004; Lane et al., 2017). Some social skills needed to function include turn-taking, joint attention, understanding emotions, body language, and back-and-forth conversation (Silveira-Zaldivar, Ozerk, & Ozerk (2021). For example, in the home setting, children who struggle with identifying emotions may experience more victimization than other children by peers, including siblings (van den Bedem et al., 2018). In the school setting, a lack of joint attention, which is defined as two people looking at the same thing simultaneously in order to interact with each other (Bruinsma, Y., Koegel, R. L., and Koegel, L. K., 2004) has been linked to later reading difficulties (Martoccio, Brophy-Herb, & Onaga, 2014), while children who struggle with turn taking may struggle to create and maintain friendships (David et al., 2020). Some of these skills are often learned naturally through play, while others must be taught through explicit instruction (Doernberg et al., 2021; Ingersoll & Schreibman, 2006).

Children with Developmental Delay are at-risk for social deficits. For example, Kopp and colleagues (1992) conducted a study in which they observed preschoolers who were both typically developing and exhibited developmental delays. Preschoolers with developmental



delays were observed to play alone more frequently than typically developing peers; these preschoolers also displayed less positive affect. Merrell & Hollan (1997) utilized parent and teacher report to examine the social-emotional differences between preschool children who exhibit developmental delays and those who are typically developing. Participants identified as having DD were found to be four to five times more likely to display difficulties with social skills. More specifically, the social skills identified as significantly different between the group of participants with DD and the typically developing group were isolated behavior and being able to engage in social skills independently. Because these social skills are the foundation for more advanced social skills learned later in life, a deficit in these skills can set children with DD up for greater challenges in their future, including social and academic difficulties.

The initiation and maintenance of friendships are an integral part of child development. The nature of friendships allows for the learning and practice of social skills including emotion regulation, cooperative play, reciprocity, and back-and-forth conversation. Having friends during the preschool or early elementary years when these skills are primarily learned makes relationship creation and maintenance easier later in adolescence and adulthood. Children with a DD in social skills exhibit lower social competence, meaning that making friends can be difficult (Guralnick et al., 2007). Friendship becomes increasingly important in adolescence as children seek more social acceptance, which is highly connected to emotional well-being at this age (Demir, 2008).

A decrease in academic performance has also been linked to low social skills. Several social skills have been aligned with school success such as working with others, effective communication, and emotion regulation. A longitudinal study found that children with a deficit in social skills showed lower academic scores at the start of kindergarten, which persisted

through the end of second grade (McClelland, Morrison, & Holmes, 2000). Similarly, a student's level of social competence has been linked to their academic performance in adolescence (Wentzel, 1991). A systematic review and meta-analysis were conducted and found that social-emotional interventions overall increased reading, math, and science levels. Reading and math were more significantly impacted than science, as the effect size for science did not meet What Works Clearinghouse standards for meaningful effect size (WWC, 2014). Overall, the authors noted that increasing students' social-emotional health increased academic achievement over time (Corcoran et al., 2018).

Noting the life challenges that can arise from having deficits related to social skills, the importance of early intervention with children exhibiting developmental delays is integral and has been well documented within the literature. Establishing social skills in young children may be beneficial to the later natural development of more advanced skills (Moody, 2020). For children with developmental delays, early intervention is especially important in order to meet milestones that may be missed (Scherr et al., 2020). Furthermore, the provision of early intervention in educational contexts is legally mandated for students with disabilities (IDEA Sec. 303.13). Some states, including South Dakota, allow students to remain in the category of DD under IDEA until age 9, making the importance of interventions that can transition with students from early childhood to early elementary essential to support student outcomes (Eligibility Criteria, 2022). Because of this, age-appropriate and feasible interventions are essential in the implementation of interventions in schools.

### **Social Skills Interventions**

Social skills interventions have been found to be effective with young children (Peterson & McConnell, 1996; Coplan, et al., 2010). Several types of social skills interventions exist and

are effective for children with DD including, but not limited to, peer-mediated, video modeling, packaged social-emotional curriculum, behavior skills training, and teaching interaction procedure. As with any type of intervention, these various strategies have benefits and limitations. This leads to the need for practitioner and clinical judgment in order to determine which will be most effective for individual students and what will be most feasible for their district.

**Peer-Mediated Interventions.** Peer-mediated interventions are interventions in which the peers of the participants are trained to implement particular components of the intervention (Chang & Locke, 2016). Robertson and colleagues (2003) conducted a study where typically developing peers were trained to model the appropriate use of target skills to participants. Two preschool-aged children with DD received a peer-mediated intervention in a child-care center in order to increase interactive play, on-task behavior, and appropriate behavior in the classroom during activities. Two peers from the class received training on the intervention prior to participating in sessions with the two children with DD. Children were engaged by their peers' using songs, pictures, and verbal prompts. Both children showed mastery of each target skill after the intervention, however, generalization was not assessed.

A meta-analysis was conducted on the various types of peer-mediated interventions on social behavior. Twenty-one articles between the years of 1984 and 1989 were included if they met the following criteria: participants aged 3-20 with behavioral difficulties, a peer-mediated intervention was used either alone or in conjunction with other procedures, the study utilized single-case design or between-group design, and direct measures of behavior were used. The articles included studies where peers either directly or indirectly played a role in the intervention. Most studies showed a positive change; only four were not noted as having a partially positive

outcome because either not all participants showed a change or not all targeted behaviors showed a positive change. Overall, generalization was sufficiently assessed but not planned for in the studies included (Mathur & Rutherford, 1991).

Peer-mediated interventions have been demonstrated to be effective within previous literature. Peer-mediated interventions can follow several different paths: peer modeling, peer initiation training, and direct training for both the target children and peers. Peer modeling employs peers demonstrating the appropriate way to do a target skill. Peer initiation training sees adults training peers in ways to appropriately engage the participants using target skills. Direct training for both the target children and peers has all involved children receiving the intervention. Peer-mediated interventions are frequently used with children with ASD and DD because of the naturally occurring reinforcer for generalization in peer interactions (Battaglia & Radly, 2014).

Peer-mediated interventions have become increasingly popular in increasing social skills in that using a peer model gives the child practice with typically developing peers and the opportunity for relationships to form arises. These have been particularly successful in inclusive settings such as general education classrooms (Martinez, 2018; van Rhijn et al., 2019). Video modeling has also been shown to be effective with this population. However, when compared with peer modeling in a study done by Kucksar (2018), results indicated that the success of peer-mediated vs video modeling interventions may be dependent on the individual child, even though both interventions have been equally successful overall.

**Video Modeling Interventions.** One of the most common forms of social skills interventions for the early childhood population is video modeling. This type of intervention involves participants watching a video where various skills are modeled appropriately. Video

modeling can be conducted in several ways, in that the child receiving the intervention may watch themselves, peers, or adults engaging in the appropriate demonstration of a target skill (Litras, Moore, and Anderson, 2010). O'Connor (1969) was able to first demonstrate the effectiveness of video modeling as a social skills intervention with preschoolers. Six socially isolated preschoolers were shown a video and subsequently showed an increase in the frequency of peer interactions. Many more studies have been conducted since and have continued to find positive results working with this population (Green et al., 2013; Hart Barnett, 2018).

Green and colleagues (2021) also investigated the effectiveness investigated of video modeling with young children. Four preschool-aged boys were given a video modeling intervention due to aggressive and disruptive behavior or being socially withdrawn. The video they were shown was aimed at teaching the children how to appropriately approach and interact with peers. A multiple baseline design was used and generalization was accounted for. All four children showed increases in appropriately interacting with a peer, however, lasting effects were only seen with two children. Two of the four children demonstrated increases in initiating social interaction. The authors hypothesized that this may have been due to the fact that the socially aggressive and disruptive children were already attempting to interact, as the increases were seen in the children who were socially withdrawn. Teachers rated this as a socially valid intervention and parents indicated that some of the positive behaviors had generalized to the home setting.

**Packaged Social-Emotional Curriculum.** Various social skills interventions do not fit in the category of video modeling or peer-mediated, rather, they are a packaged program or curriculum that can be purchased and implemented. The effectiveness of packaged social-emotional curricula is well-documented in the literature (Bierman & Motamedi, 2015). However, a limitation of packaged social-emotional curriculum is that it is not tailored to the

needs of individual students in a small group, as they follow a set sequence and cover a wide variety of skills for which students may not need intervention. The Second Step Early Learning curriculum is an example of a packaged intervention that is typically employed within early childhood contexts. It is aimed at three- to five-year-old children and is typically run over the course of 28 weeks. Teachers are encouraged to prompt children to use the skills learned in each lesson throughout the week that each lesson is learned. Both executive functioning and social-emotional development are targeted in this curriculum. A study evaluating the effectiveness of the Second Step curriculum was employed in 63 preschool classrooms over the course of 2 school years; two separate cohorts of children were involved in the study. The study found that both social-emotional and executive functioning skills were improved after completing the curriculum, which in turn increased kindergarten readiness and on-task behavior (Wenz-Gross et al., 2018).

The Promoting Alternative Thinking Strategies (PATHS) Curriculum is also frequently used in early childhood classrooms. It is aimed at teaching children social-emotional strategies in order to prevent and reduce behavioral problems. It is designed to be implemented over a course of 44 weeks with one lesson being delivered each week. A study was conducted over the course of 10 months with three groups: Group 1 did not use the PATHS curriculum, Group 2 used an adapted PATHS curriculum, and Group 3 used the full PATHS curriculum. The adapted curriculum used one of the stories from the PATHS curriculum, the teacher's version of a feelings chart used in the original PATHS curriculum, and stuffed turtles placed around the room for children to access during times of distress. Only Group 3 showed statistically significant increases in positive social behavior, emotional understanding, and self-regulation skills; reduced levels of problem behaviors were also seen. Teachers' social validity reports post-intervention

stated a general change in student behavior and that children had a greater capacity to communicate their feelings to adults and peers. However, they noted that preschool-aged children had difficulty with the “stop and think” component that is strongly emphasized in the curriculum (Hughes & Cline, 2015).

The Superheroes Social Skills program is another example of a packaged curriculum comprised of multiple intervention strategies and has been shown to be effective with young children with ASD, in which the Teaching Interaction Procedure (TIP) is embedded and has been shown to be effective with young children with ASD. This program is similar to other TIP programs but includes video modeling. Videos used in sessions show animated superheroes demonstrating a skill, providing a rationale, breaking the skill into discrete steps, and modeling. Facilitators also model correct and incorrect examples. Participants then participate in role plays with corrective feedback. Following role plays, a social story is shown demonstrating the skill and providing an example of a scenario when the skill would be used. Studies have found this curriculum to be an effective social skills intervention with young children (Radley, Hanglein, & Arak, 2016; Murphy, Radley, and Helbig, 2017).

### **Behavior Skills Training**

A common and effective mode of social skills intervention is behavior skills training (BST). This is not a packaged curriculum, but a type of teaching procedure that can be feasibly implemented in schools. BST utilizes explicit instruction, modeling, and practice to teach age-appropriate social skills where deficits have been identified (Moody, 2020). Various materials for the intervention are created by the practitioner. This includes task analyses for target skills and the steps for both running the group and the instruction of target skills. A BST intervention may start with introducing the target skill, modeling the accurate use of the skill, and having

participants practice the use of the skill. This has been found to be highly effective in increasing a variety of social skills in children with DD. BST in social communication instruction increased the levels of parallel play in a study of three children in a general education classroom (Stanton-Chapman & Brown, 2015).

Behavior skills training was first noted to be effective in a study conducted by Miltenberger et al. (2004), which aimed at improving gun safety in children. Young, elementary-aged students were each put in a room at home and school where an unloaded gun was present to assess the child's behavior towards the gun, ranging from touching the gun to leaving the room without touching the gun and reporting it to an adult. A multiple baseline across-subjects design was used, with each child receiving two intervention sessions regarding what to do if they find a gun; all aspects of behavior skills training were included: instruction, modeling, rehearsal, and feedback. Two booster sessions were given if the child did not pass the post-assessment after the initial intervention sessions. The results of the study showed that BST was effective in training young children how to behave when a gun was present, leading to the conclusion that BST may be effective for working with other behaviors in children (Miltenberger et al., 2004).

Dickson and Vargo (2017) provide another demonstration of the effectiveness of BST with young children to teach lockdown procedures. Kindergarteners were expected to learn a sequence of seven steps after baseline sessions were conducted. These steps included behaviors such as ending their current activity, finding a hidden area and moving there quietly and quickly, and sitting quietly until instructed. The intervention was completed in groups and after instructions were given to the students, modeling and rehearsal occurred. Corrective feedback and praise were provided until all students showed mastery of six of seven skills. Maintenance



was measured several days following BST. All groups showed mastery of target skills during and after intervention.

Beaulieu and Hanley (2014) investigated compliance with multi-step instructions in preschoolers following the implementation of BST. Responding to a teacher saying their name was significantly increased following intervention. Teachers were asked to say either a student's name or a whole group call prior to delivering instructions. During baseline, students were given five chances to respond to a name call and instruction and five chances to respond to a group call and instructions. Teachers gave steps for and modeled the expected skill, had students role-play in front of the class, and provided praise and corrective feedback. A group reward contingency was used as reinforcement, where tokens were distributed intermittently throughout the day and tokens were drawn from a bin at the end of the day. The selected token indicated that that student received a chosen prize from a menu. A group token was added and, if selected, the class was given five minutes of free play. Teachers rated the intervention with strong social validity. Generalization was not assessed.

Similar to Beaulieu and Hanley's study, Wahman and Lewis (2021) conducted a study that evaluated the effectiveness of BST in increasing the occurrence of expected classroom behavior. The study, which was conducted in a university child-care setting, aimed at increasing correct behavioral responses during specific routines (i.e. lining up at the door). Three preschool-aged children with behavioral difficulties in the class required the intervention but the lessons were given to all students, with data collection only occurring for the three target students. The teachers used social stories to share what the behavior expectations were and provided feedback and praise to answers provided for comprehension questions at the end of the story. The students were then provided a scenario and asked to model the correct behavioral response. Finally, when

the routine occurred during the day, the teacher provided a verbal prompt for students to follow the instructions and behave accordingly. Maintenance was collected for all three target students and an increase in compliance with behavioral expectations was seen in two students. One student did not see a consistent change in behavior following intervention. This may be because the fidelity of teacher implementation between each part of the intervention phase was not consistent (Wahman & Lewis, 2021).

Safety skills can also be targeted using BST. A study conducted by Barton, Schwebel, and Morrongiello (2007) demonstrated the effectiveness of increasing street safety in young children after receiving instruction on how to cross a street safely. Children learned to look left and right before crossing the street, walking across the street instead of running, and waiting for safe gaps between traffic to cross the street. Four levels of supervision scenarios, the lowest being crossing alone and the highest being parents crossing with their child, were used to gather baseline data prior to intervention. Each level of supervision while crossing during baseline occurred five times, leading to a total of 20 crossings total in baseline. During intervention, instruction was provided by researchers and then the participants were given three opportunities to practice crossing a pretend street under adult supervision. Five more unsupervised crossings were conducted to assess for generalization. Pedestrian safety significantly increased in all variables except one, missed opportunities to cross, with the intervention being less than 15 minutes worth of intervention.

### **Teaching Interaction Procedure**

The Teaching Interaction Procedure (TIP) is a variation of behavior skills training. Similarly to BST, the skill is introduced and modeled accurately, after which participants practice the skill. However, TIP varies in that a rationale for target skills is provided to

participants when the skills are introduced, and the skills are modeled both accurately and inaccurately; skills are still practiced with participants in session. The provision of a rationale was originally hypothesized to be a reminder of why a child should use a certain skill, as well as to teach children about the effects of their behavior (Leaf et al, 2015). A study analyzing the necessity of the various components of TIP was conducted and found that the provision of a rationale, alongside role play, was more effective than other components of TIP (Olberding, 2018).

The effectiveness of the Teaching Interaction Procedure has been evaluated in various studies in the literature. A social skills group including a typically developing peer was run using both TIP and social stories in order to determine which was more effective for students with ASD or DD. Sessions started with verbal probes to determine the current skill level. Once all probes were completed with each student, they were given a brief break and then the first of the two conditions was taught. Another brief break was given, and the students were taught using the second condition. The order of conditions in each session was randomly selected. The TIP condition consisted of identifying the skill, providing a rationale, providing steps for the skill, modeling the skill correctly and incorrectly, student role play, and corrective feedback. Tickets were given for correct responses and feedback. The social skills condition consisted of reading the social story, intermittently providing tickets for attending to the story, behavior correction for inattentive behavior, and comprehension questions following the story. Both conditions utilized a token economy where at the end of the social skills group, students could trade in their tickets for prizes. While no behavior change was seen in the social story condition, significant and consistent behavior change was seen in the TIP condition (Kassardijan et al., 2014).

The Cool versus Not Cool procedure can be embedded within the TIP method. This procedure entails a trainer demonstrating scenarios for both appropriate and inappropriate completion of a skill. The child then states whether the demonstration was “cool”, meaning correct, or “uncool”, meaning incorrect. This procedure was used in a study of children with ASD. To modify a variety of behaviors. Of the three young participants, one was preschool-aged. This participant was trained in behaviors related to abduction prevention, such as saying no to going with a stranger, not following strangers, and maintaining eye contact for ten seconds. Baseline data was gathered, and the intervention followed the TIP using the Cool versus Not Cool procedure. However, participant role play was only added if a participant had not reached mastery on the 10<sup>th</sup> probe. The results of the study show that the preschool-aged participant was able to achieve mastery of abduction avoidance skills but did not for maintaining eye contact for ten seconds. However, his use of an average amount of eye contact did increase following TIP with role play even though mastery was not achieved (Lead et al., 2012).

TIP has been used to increase the amount of play that occurred between young typically developing children and their siblings with ASD. Three sibling pairs were selected to participate and were trained to do four skills: inviting their sibling to play with them, asking their sibling to share objects with them, asking their sibling to follow a play-related instruction, and asking what their sibling wanted to play. Probes were completed using role play with a researcher, structured probes with their sibling, and free-play probes with their sibling. During the intervention phase, researchers completed the TIP with the children using rationales, providing steps for the skill, modeling, and role-play. Priming was deemed necessary and added to one sibling pair’s intervention. Correctly answering questions and completing the skill appropriately in role plays earned the child stickers which they put in a notebook they were given. The three typically

developing children all showed mastery and maintenance of skills, which in turn increased the social behavior of the siblings with ASD (Oppenheim-Leaf et al., 2012).

### **Generalization**

Generalization, or the transfer of skills to a variety of naturalistic contexts across settings and individuals, is essential to successful social skills interventions. Learning social skills in one context, without the ability to transfer skills to everyday situations, greatly reduces the overall impact and external validity of an intervention, as the long-term effects may not be recognized; individuals may continue to exhibit skill deficits in contexts not directly intervened upon. Stokes and Baer (1997) outline nine categories in which ways to consider generalization in interventions can be placed.

The first of these categories is “Train and Hope”, in which generalization is not planned for when creating and implementing an intervention. This can occur when generalization is either desired or unthought of in preparation and is the least systematic category. However, this form of generalization can still be successful. Researchers using this technology of generalization may choose to not report generalization data if that data is not consistent with the initial positive outcome of their intervention, as it was not a set of data that was going to be reported in the original plan, thereby showing a high percentage of effectiveness for studies using this method (Stokes and Baer, 1997).

“Sequential Modification” follows “Train and Hope”, in that generalization is not planned for, but rather it is examined for following intervention, and modifications are made to various aspects of the intervention to achieve generalization of the skill. This could be seen if a skill is achieved in a home setting but does not generalize to school. Modifications would be made at the school to achieve the same desired behavioral outcome that was achieved at home.

The same idea can be applied by training different personnel involved with the participant or applying the same tactics to a different time of day in the same setting (Stokes, and Baer, 1997).

The third category used by Stokes and Baer (1997) with generalization is “Introduce to Natural Maintaining Contingencies”. In this method, the skill being taught has a naturally occurring reinforcer that will help generalize and maintain the behavior after the conclusion of the intervention. This is typically seen in research on social behavior in children, as the natural play-based social interactions of children are positively reinforcing for positive behaviors. However, this type of generalization is only possible when a naturally occurring contingency exists in the environment in which the skill must be used.

A social skills intervention was provided to children aged nine through twelve with social anxiety in disruptive classrooms. Teachers provided the intervention in their classrooms, using the Playing and Learning Social Skills program; the teacher’s classrooms received the intervention, but data was only collected on students identified with social anxiety. A Teaching Interaction Procedure is used in this program to help students learn the skills. They then practiced the skills in a game that accompanies the program. A decrease in levels of social anxiety was seen following the intervention and was maintained for six months following the intervention (Caballo, Carrillo, & Ollendick, 2015).

The fourth category is “Train Sufficient Exemplars”. In this form of generalization, sufficient representations were used to retrain to see maintenance effects. In this case, generalization in all desired areas is not seen initially, so more training for the skill is done in different settings (i.e. another classroom) or with another adult or peer. After completing retraining in or with an exemplar, broader generalization can be seen outside of the initial two trainings. The second training can serve as a bridge between little maintenance effects with the

first training and broad generalization following a second training with an exemplar. It is important to note that not all scenarios have a sufficient exemplar to attain generalization (Stokes and Baer, 1997).

The category of “Train Loosely” uses less strict and more variable lessons to teach the skill to increase the likelihood of generalization. Having a specific, prescribed behavior in response to a specific response sets up the scenario for little variability in prompts, which may not be realistic for working with behavioral or social difficulties in children. Learning with a greater variety of prompts or lessons allows the child more freedom to appropriately respond with multiple reactions. However, this method is seen very little in research and needs more research to show its effectiveness.

The use of variable reinforcement can be seen in the “Use Indiscriminable Contingencies”. Variable reinforcement schedules have been shown to be resistant to the decline or extinction of skills learned in intervention, which is another way to conceptualize generalization. Like, “Train Loosely”, this method also has little research; what has been published has seen encouraging results (Stokes and Baer, 1997). Two individuals with moderate to severe intellectual disabilities who frequently engaged in aggressive behavior were referred for behavior intervention. FBAs were conducted in order to determine the functionality of the aggressive behavior. This study used both a fixed-time and a variable-time schedule of NCR. It was found in both individuals that a variable-time schedule was just as effective as a fixed-ratio schedule of reinforcement in decreasing aggressive behavior (van Camp et al., 2000).

“Program Common Stimuli” does not actively plan to train for generalization, as the training is set up to have factors that are the same as the natural environment in which the behavior occurs. Because these similar factors are present in training where skills are learned, the

factors in the natural environment will help to sustain the learned skill as the setting and trainer may not have changed from the general environment. This is particularly true when utilizing peers in training, and has shown promise in the current research, which too needs more research (Stokes and Baer, 1997).

Mesmer, Duhon, and Dodson (2007) provide an example of a study demonstrating promising results for programming common stimuli. Three elementary-aged students who had exhibited low levels of work completion by their teachers were referred for intervention. During baseline, sessions were alternated between a training setting, the special education classroom, and the generalization setting, the general education classroom. Students were given worksheets and a goal at the beginning of the day stating how many academic problems needed to be completed. A digital timer was used for one student and a thumbs-up sign was placed on the tops of worksheets for the other participants. At the end of a session, the teacher counted the number of academic responses not completed. If the students exceeded their goal, they immediately got to choose a prize. The visual stimuli remained present in the general education classroom during the maintenance phase. Levels of academic work completed remained high in the maintenance phase, showing that programming common stimuli can be an effective method of generalization.

Using the “Mediate Generalization” method means that researchers will train skills or responses that are likely to be used commonly in the natural setting or with other situations. An example of this would be teaching a child to ask for help appropriately as there are a wide variety of situations in which a child may need to ask for help from others (Stokes and Baer, 1997). This model of generalization can be seen in a study done with three individuals with an intellectual disability who lived in a group home and received a social skills intervention due to noted deficits. Observations done in baseline were used to determine which social skills were most



pertinent to work on; interviews with the residential staff were also completed. Six skills were identified for intervention: following directions, accepting no as an answer, maintaining a conversation, being respectful, disagreeing with others, and sensitivity to others. However, data was collected on appropriate interactions, inappropriate interactions, eye contact, and appropriate posture. Intervention was conducted first by the researcher with one of the participants, where each skill was taught and practiced until mastery was shown. Peer training was then conducted by the participant who had been trained by the researcher. Data was not collected on the peer trainer's behavior during peer training. A significant change in behavior was seen in both the peer trainer's behavior following individual training and in participants receiving the training from their peer. Generalization was seen in all skills following intervention (Duan & O'Brien, 1998).

The final category Stokes and Baer (1997) proposed is "Train 'To Generalize'". This method trains children to generalize the skills that they have learned on their own. This technique is often seen in classrooms with academic material. Providing children with a prompt to use the skill they have learned in a new environment or asking them to offer examples of where this skill could be used does not often lead to the use of the skill in those scenarios. This is used very little as usually generalization is "considered an outcome rather than a behavior itself".

Much of previous research has noted TIP's effectiveness in increasing social skills in developmentally delayed young children. However, little research has been conducted on the generalization of skills acquired during a TIP intervention to free play in the general education classroom. Free play is a developmentally appropriate activity for young children where children can naturally practice interactions with others in an unstructured setting (Lee et al., 2020). Therefore, generalization to this area could allow for skills to naturally be maintained.

## **Purpose of the Study**

The purpose of this research study is to address the gap in previous research by conducting a social skills group with children aged 3-5 with a Developmental Delay (DD) using the Teaching Interaction Procedure. The following study has four research questions.

1. Does TIP as a social skills intervention increase skill acquisition for young children with DD in the intervention setting?
2. Does TIP increase skill acquisition for young children with DD in the generalization setting?
3. Do teachers and students perceive TIP to be socially valid?
4. Does TIP produce a change in pre-intervention to post-intervention ASSP scores?

## Chapter II

**Method** Participants were selected from a preschool classroom in a rural school district in the Midwestern United States. Each participant received special education services under the IDEA category of Developmental Delay. After speaking to teachers in the classroom about students who may benefit from participation in the study due to a delay in social-emotional development, three students were recruited for participation. Scores on the Batelle Developmental Inventory – 3<sup>rd</sup> Edition (Elbaum, Gattamorta, & Penfield, 2010) were received from the school from the participant's most recent special education evaluations. All participants had scores at or below 1.5 standard deviations from the mean in the social-emotional category. All participants were receiving early intervention services under the IDEA category of Developmental Delay. A secondary researcher was recruited from the University of South Dakota School Psychology program, specifically, a first-year school psychology graduate student was selected to assist with the study in the role of a data collector.

### **Participants**

#### **Participant 1**

The first participant, Joey, qualified for special education under the category of Developmental Delay. He was a 5-year-old Caucasian boy; his socioeconomic status is unknown. He exhibited no language delay at the time of the study as evidenced by language scores obtained by the school district. Specifically, Joey's receptive language subtest score was a 5; his expressive language subtest score was an 8. Joey's social skills pre-intervention were found to be a total score of 144 on the ASSP. The Reciprocity subscale score pre-intervention was 61, the Participate/Avoid subscale score was a 39, and the Detrimental Behavior subscale score was a 33.

## **Participant 2**

The second participant, Ross, qualified for special education under the category of Developmental Delay. He was a 3-year-old Caucasian boy; his socioeconomic status is unknown. Ross' receptive language subtest score was an 8; his expressive language subtest score was a 9. However, throughout the study, Ross was observed to infrequently make prompted or unprompted verbalizations. This included a limited number of verbalizations in response to researcher initiations and limited spontaneous verbalizations. For example, Ross was unable to say his name after several researcher prompts when intervening on the Introducing Self to Others skill. Ross' social skills pre-intervention were found to be a total score of 86 on the ASSP. The Reciprocity subscale score pre-intervention was 31, the Participate/Avoid subscale score was a 26, and the Detrimental Behavior subscale score was a 22.

## **Participant 3**

The third participant, Rachel, qualified for special education under the category of Developmental Delay. She was a 4-year-old Caucasian girl; her socioeconomic status is unknown. She exhibited no language delays at the time of the study as evidenced by language scores obtained by the school district. Rachel's receptive standard score was a 4; her expressive standard score was a 3. Rachel's social skills pre-intervention were found to be a total score of 117 on the ASSP. The Reciprocity subscale score pre-intervention was 38, the Participate/Avoid subscale score was a 33, and the Detrimental Behavior subscale score was a 34.

## **Setting**

The study was conducted in the participants' local school district located in the rural Midwest. It was determined that a pull-out group would be more appropriate than a push-in group, as a quiet space was desired in order to help participants focus on learning the skills to the

best of their abilities. A pull-out group is defined as a group of students who receives an intervention outside of the general education classroom; a push-in group is defined as a group of students who receives an intervention in the general education classroom. An empty room in the school was provided by the teacher for the group to meet in regularly. Both instructional time and free play in the intervention setting were conducted in a spare room in the school building. Prior to each session, the researchers cleared the space and kept toys brought for free play out of view of participants in order to maintain the focus on the group during instructional time. Following instructional time, the free play toys were brought out onto the floor for participants to access. When instructional time and free play had concluded in session, participants were released back into the free play time in the general education classroom where generalization data was collected.

## **Materials**

**Data Sheets.** Data sheets (Appendix A) were used by the primary and secondary researchers to record levels of skill acquisition and generalization in each treatment session; each skill was broken down into steps that could be coded individually in a dichotomous manner on each data sheet. Data sheets were kept by the primary researcher during the study. These were stored in a locked safe throughout the duration of the study.

**Treatment Integrity Forms.** A treatment integrity (Appendix B) form was used by the primary researcher each session to record the level of treatment fidelity in each session. Each session was run according to the fifteen discrete steps listed on the forms. A secondary researcher filled out the forms 20% of the time for interobserver agreement (IOA).

**Treatment Protocol.** Treatment protocols (Appendix C) were provided to the secondary researcher, a first-year school psychology graduate student, to ensure that each skill was

adequately covered in the treatment phase. Each protocol included a list of the session steps, as well as operational definitions and a rationale for the current skill.

**Session Materials.** Upon demonstration of the correct use of a skill with a peer following the lesson, a fun tie was immediately given to the participant. Fun ties were elastic bands used for ponytails. Participants could trade in 3 fun ties at the end of the practice session for a reward. Individually wrapped Starbursts or small personal-sized packets of M&Ms were available as rewards for earning three fun ties.

## **Measures**

**Autism Social Skills Profile – Second Edition.** (ASSP, Appendix D). The Autism Social Skills Profile – Second Edition (ASSP) was used to measure pre- and post-intervention levels of social skills in participants. The ASSP has been used previously to help identify skill deficits that may benefit from intervention; the skills listed on the ASSP are relevant to all children regardless of an ASD diagnosis or educational verification (O’Handley et al., 2016; Radley et al., 2017). It was used in order to help identify deficits of specific social skills in order to more specifically target intervention. It was also used in order to determine which skills were targeted in the intervention phase. This rating scale consists of 49 items asking the rater to rate how often a child engages in various social skills. Items are rated on a 4-point Likert scale (1 = Never, 4 = Very Often). Examples of items include “takes turns during games and activities”, “requests assistance from others”, and “responds to the invitations of peers to join them in activities”. The ASSP has shown high internal consistency ( $\alpha = 0.926$ ) and test-retest reliability ( $\alpha = .904$ ) (Bellini and Hopf, 2007).

**Usage Rating Profile – Intervention Revised.** (URP-IR, Appendix E). The URP-IR measures social validity in six factors: Acceptability, Understanding, Home-School

Collaboration, Feasibility, System Climate, and System Support. This was used to measure social validity as rated by the classroom teachers of the participants. It is composed of 29 items rated on a 6-point Likert-scale (1 = Strongly Disagree, 6 = Strongly Agree). Reliability was found to be high for each factor: Acceptability ( $\alpha = .95$ ), Understanding ( $\alpha = .80$ ), Home-School Collaboration ( $\alpha = .79$ ), Feasibility ( $\alpha = .84$ ), System Climate ( $\alpha = .91$ ), and System Support ( $\alpha = .72$ ), (Chafoulease et al., 2011).

**Children's Usage Rating Profile.** (CURP, Appendix F). The CURP was modified by the researcher to make it feasible for children aged 3-5. Specifically, the rating scale was shortened to include four questions that were based on the previous questions used in the original CURP. The original scale is composed of 21 items and is rated on a 4-point Likert-scale. This was modified to a 2-point Likert-scale with responses consisting of a smiling face picture and a sad face picture. This modified CURP was completed by participants at the end of the study. The researcher read each item to a participant individually and had the participants point to the smiling or sad face; the researcher recorded their answers. Reliability was found to be high for each factor on the original CURP: Understanding ( $\alpha = .75$ ), Personal Desirability ( $\alpha = .90$ ), and Feasibility ( $\alpha = .82$ ) (Briesch & Chafouleas, 2009). These reliability estimates may have changed with the modifications made to the CURP for this study.

**Direct Observation.** Observations were completed by the primary and secondary researchers in order to gather information about the participants' skill acquisition and generalization. The percentage of steps completed for each skill was calculated by dividing the completed number of steps by the total number of steps multiplied by 100.

## **Dependent Variables**

**Skill Acquisition.** The primary dependent variable of this study was skill acquisition within the training setting. Participants were given a prompt, or an opportunity to demonstrate a specific skill, with either the primary or secondary researcher. Each skill was broken down into discrete steps. Following a prompt, the primary or secondary researcher indicated which discrete steps of the skill were correctly demonstrated. Each step of a skill was scored using a dichotomous scale of Yes or No. A total skill acquisition score was calculated following each prompt by dividing the number of steps completed by the total number of steps multiplied by 100.

**Generalized Skill Acquisition.** The secondary dependent variable of this study was the generalization of skills to the natural context of free play in the classroom with the classroom teachers, meaning that generalization will be assessed across settings and individuals. Generalization data were collected prior to starting a session by the classroom teachers prompting a participant with a probe. Data was recorded and calculated in an identical manner as primary skill acquisition.

**Social Functioning.** Social functioning was evaluated by the teacher's completion of the ASSP prior to the first session and following the completion of the study. An increase in score following intervention would indicate an improvement in social functioning. The initial ASSP was also used to determine which skills to intervene upon.

### **Design and Analysis**

A multi-probe embedded within a multi-baseline across skills with concurrent replication across participants (Scattone, 2008) was utilized to evaluate the effects of a TIP social skills group on skill acquisition (Appendix G). This type of design allows for more data collection with a greater variety of skills as data is collected on each skill consistently throughout the course of



the study. Data analysis was done by visual analysis of level, trend, variability, consistency across phases, the immediacy of effect, and overlap (Kratochwill et al., 2010). A Tau-U single case effect size was also calculated to provide quantitative results pertaining to the effectiveness of the intervention.

The three phases in this study consisted of baseline, intervention, and maintenance. At least 3 data points were collected per phase for each participant in order to meet What Works Clearinghouse standards for single-case design with reservation. Due to time limits, the What Works Clearinghouse standard for single-case design without reservation of 5 data points per phase was not met (WWC, 2014). Phase change criterion between baseline and intervention consisted of a stable or consistent decreasing trend within the data. Within these data points in the intervention phase, it was necessary for each participant to demonstrate mastery by evidence of three consecutive data points at 100% skill acquisition before sessions transitioned to the next target skill. Phase change decisions were made according to observed stability in skill acquisition for the primary dependent variable in the intervention setting.

## **Procedures**

Target skills were selected by the initial teacher ratings on the ASSP. Items scored as a 0 or 2 across all participants were included as potential options for target skills to be intervened on. Five skills were selected for baseline based on skills with the lowest scores as indicated by the ASSP across all three participants. The five skills included for baseline were Body Language/Nonverbals, Introducing Self to Others, Joining a Conversation, Talking About the Interests of Others, and Perspective Taking. Task analyses were developed for each skill selected for baseline; each step for a skill was operationally defined. Following baseline, the four skills with the lowest percentage of skill performance across participants were selected for

intervention. Each participant received intervention for the same skills. Skills that were selected for intervention included Body Language/Nonverbals, Introducing Self to Others, Joining a Conversation, and Perspective Taking. Talking About Interests of Others was dropped due to scores obtained by a participant being significantly higher than scores on other skills. Scores obtained by two other participants indicated a need for intervention. Even though scores for Body Language/Nonverbals were higher for two participants, it was deemed necessary for intervention as this is a foundational social skill and was needed by one participant before intervening on other skills.

**Baseline.** Baseline occurred during free play in both the training and the generalization setting. First, the primary and secondary observers provided prompts related to each target skill to participants during free play in the training setting. For example, a probe for “Introducing Self to Others” was asking a participant to ask an adult what their name is and to share their name. Participants were allotted 5 seconds to respond after which steps completed correctly were recorded. No praise or corrective feedback was provided following a prompt. Following data collection in the training setting, baseline generalization data was collected in the classroom; teachers gave the prompts in the classroom. In the baseline phase, at least five probes were provided for each skill to each participant. It was determined prior to running the study that three data points collected during baseline must indicate a stable or downward trend in order to proceed to intervention.

**Intervention.** In each intervention session, baseline data continued to be collected on target skills not yet intervened upon in both the training setting and the generalization setting. Prompts for each skill were delivered by the primary researcher and secondary researcher in the training setting and by the teachers in the generalization setting. Once baseline data was

collected, the researchers gathered the participants together and remind the group of the group rules and what we are doing in the group. Following check-in, a brief lesson was given including a rationale for the target skill, steps for how to do the target skill, and a demonstration from both researchers on how to do a skill accurately and inaccurately. Following each demonstration, the participants were asked to state what was correct and incorrect about the modeling. Participants were asked to role-play a skill correctly with the primary and secondary researchers. Praise and corrective feedback were given during the role play portion of intervention sessions dependent on the participant's demonstration of the target skill. Once each student had demonstrated mastery, the session will conclude, and free play commenced within the intervention setting. Mastery was defined as 3 consecutive scores of 100% between the primary and secondary researchers. Generalization of skill acquisition was gathered during free play in the general education classroom setting with probes being given by the classroom teachers; three data points were collected for each participant on the target skill taught in the lesson.

**Maintenance.** The maintenance phase began once mastery was seen with each participant on a target skill. This was identical to baseline, in that a prompt for a skill was given to each participant first in the training setting and then in the generalization setting. No praise or corrective feedback was given following a response or non-response. Skill accuracy was recorded following each prompt, which was identical to prompts delivered in baseline.

### **Interobserver Agreement and Treatment Integrity**

The primary researcher was the primary observer with the secondary researcher serving as the secondary observer for data collection. Each observer was provided with operational definitions for each target skill and discrete skill steps prior to data collection. The primary researcher provided examples of occurrence and non-occurrence to the secondary researcher. If

agreement between the primary and secondary researcher fell below 80%, the secondary observer was to be retrained. During the course of the study, IOA did not fall below 80%. Therefore, no retraining was necessary. Interobserver agreement was assessed for at least 30% of sessions. This was calculated by dividing the number of agreements by the number of disagreements multiplied by 100.

Treatment integrity was evaluated by the researcher every session. This was measured by a treatment integrity sheet that was created by the researcher. These integrity sheets contained a comprehensive list of steps that were to occur in each session. This was rated on a dichotomous scale of Yes/No. A treatment integrity percentage for each session was calculated by dividing the number of steps that correctly occurred by the total number of steps multiplied by 100. IOA was gathered for 20% of all sessions.

## Chapter III

### Results

The primary dependent variable in the present study was skill acquisition in the training setting with the secondary dependent variable being skill acquisition in the generalization setting of free play in the general education classroom. Mastery was defined as a participant demonstrating 100% of the steps of a target skill across three consecutive data points.

**Participant 1 - Joey.** Results for Joey are presented in Figure 1. During baseline in the training setting, Joey demonstrated moderate to high levels for Body Language/Nonverbals ( $M = 86\%$ , range = 50-100%). In the intervention phase, Joey demonstrated mastery of Body Language/Nonverbals ( $M = 100\%$ ) in the training setting. During maintenance in the training setting, Joey demonstrated continued mastery of Body Language/Nonverbals ( $M = 100\%$ ). Joey demonstrated low levels of Introduces Self to Others ( $M = 8\%$ , range = 0-75%) during the baseline phase in the training setting. Mastery of Introduces Self to Others ( $M = 100\%$ ) was observed in the training setting during the intervention phase. Immediacy was demonstrated for this skill between the baseline and intervention phases. In the maintenance phase in the training setting, Joey demonstrated moderate to high levels of Introduces Self to Others ( $M = 67\%$ , range 50-100%).

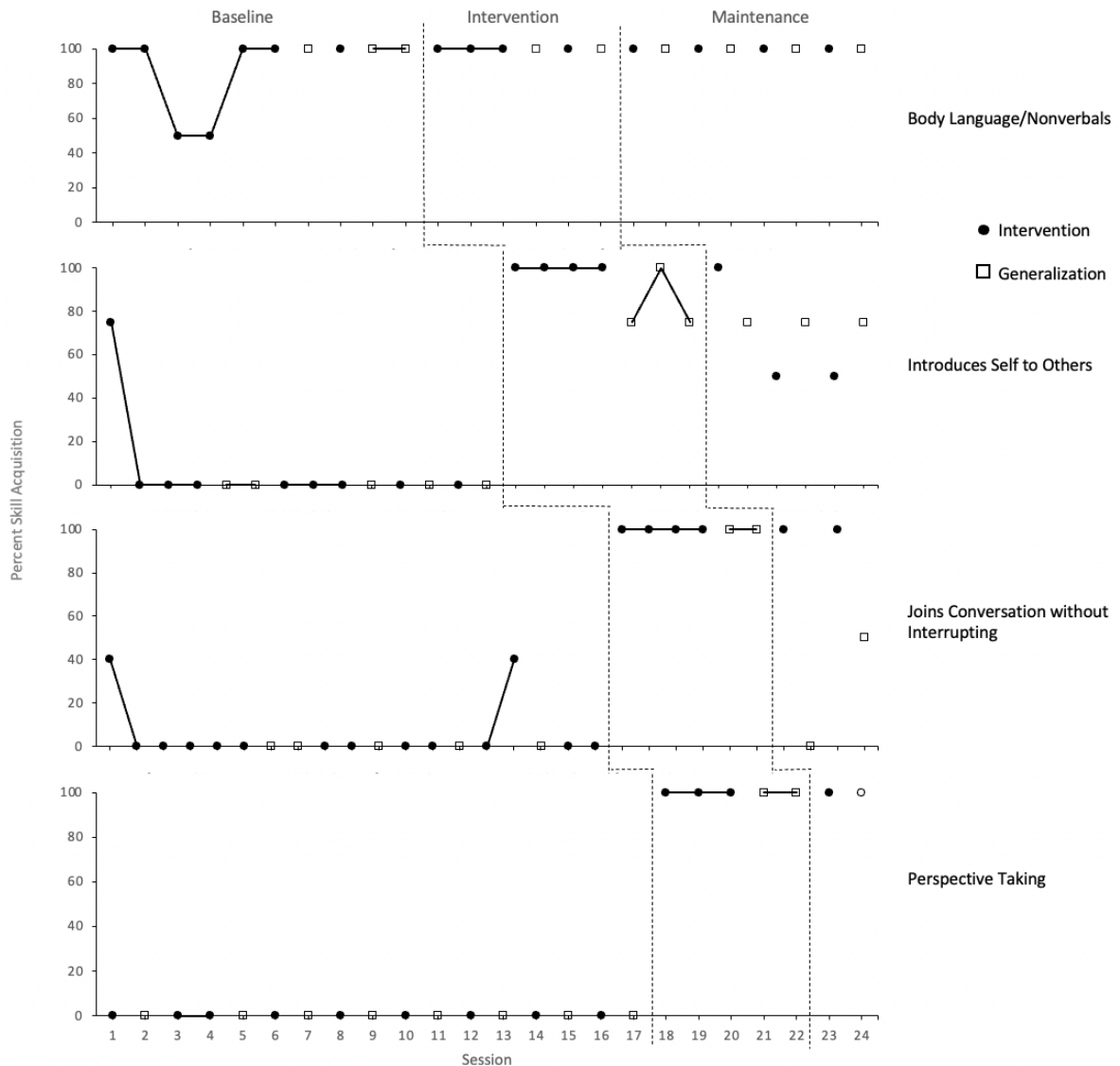
Low levels of Joins Conversation without Interrupting ( $M = 6\%$ , range = 0-40%) were observed during the baseline phase in the training setting. During the intervention phase in the training setting, Joey demonstrated mastery of Joins a Conversation without Interrupting ( $M = 100\%$ ). Immediacy was demonstrated for this skill between the baseline and intervention phases. During maintenance in the training setting, continued mastery was observed for Joins a Conversation without Interrupting ( $M = 100\%$ ). Joey demonstrated low levels of Perspective

Taking ( $M = 0\%$ ) in the baseline phase in the training setting. Mastery was observed in both the intervention phase ( $M = 100\%$ ) and the maintenance phase ( $M = 100\%$ ) in the intervention setting. Immediacy was demonstrated for this skill between the baseline and intervention phases.

Generalization skill acquisition was collected in the generalization setting: the general education classroom. Joey demonstrated consistently high levels of Body Language/Nonverbals ( $M = 100\%$ ) in the baseline phase. During the intervention phase, mastery was observed in Body Language/Nonverbals ( $M = 100\%$ ) and the maintenance phase ( $M = 100\%$ ). Consistently low levels of Introduces Self to Others ( $M = 0\%$ ) were observed in the baseline phase during free play in the classroom. In the intervention phase, immediacy and high levels were seen in this skill ( $M = 83\%$ ). Introduces Self to Others remained at high levels ( $M = 75\%$ ) in the maintenance phase.

Joins a Conversation without Interrupting ( $M = 0\%$ ) was observed at consistently low levels in the baseline phase in the classroom. During the intervention phase, immediacy and mastery were observed in this skill ( $M = 100\%$ ). During maintenance, Joins a Conversation without Interrupting showed inconsistent low to moderate levels of generalization post-intervention ( $M = 25\%$ ). In the baseline phase in the general education classroom, Perspective Taking was observed at consistently low levels ( $M = 0\%$ ). Joey demonstrated immediate mastery in the intervention phase for this skill ( $M = 100\%$ ). Continued mastery was observed during the maintenance phase in the classroom for Perspective Taking ( $M = 100\%$ ).

Figure 1. Percentage of Skill Accuracy, Joey



**Participant Two - Ross.** Results for Ross are presented in Figure 2. During baseline in the training setting, Body Language/Nonverbals, Ross demonstrated a wide range of scores from ( $M = 43\%$ , range 0-100%). The intervention phase for this skill produced moderate to high skill acquisition levels ( $M = 67\%$ , range = 0-100%). Ross demonstrated mastery of this skill in the maintenance phase in the training setting ( $M = 100\%$ ). Low levels of Introducing Self to Others were observed in the baseline phase in the training setting ( $M = 0\%$ ). Consistently low levels of

this skill were observed in the intervention phase ( $M = 0\%$ ). Ross continued to demonstrate no skill acquisition of this skill in the maintenance phase in the training setting ( $M = 0\%$ ).

Ross demonstrated low levels of Joins a Conversation without Interrupting ( $M = 0\%$ ) in the training setting during baseline. Consistently low levels of this skill were observed in the intervention phase ( $M = 0\%$ ), as well as in the maintenance phase in the training setting. During baseline in the training setting, Ross demonstrated low levels of Perspective Taking ( $M = 0\%$ ). This continued into the intervention phase ( $M = 100\%$ ), where Ross demonstrated consistently low levels of this skill ( $M = 0\%$ ). No skill acquisition was seen in the maintenance phase in the training setting ( $M = 0\%$ ).

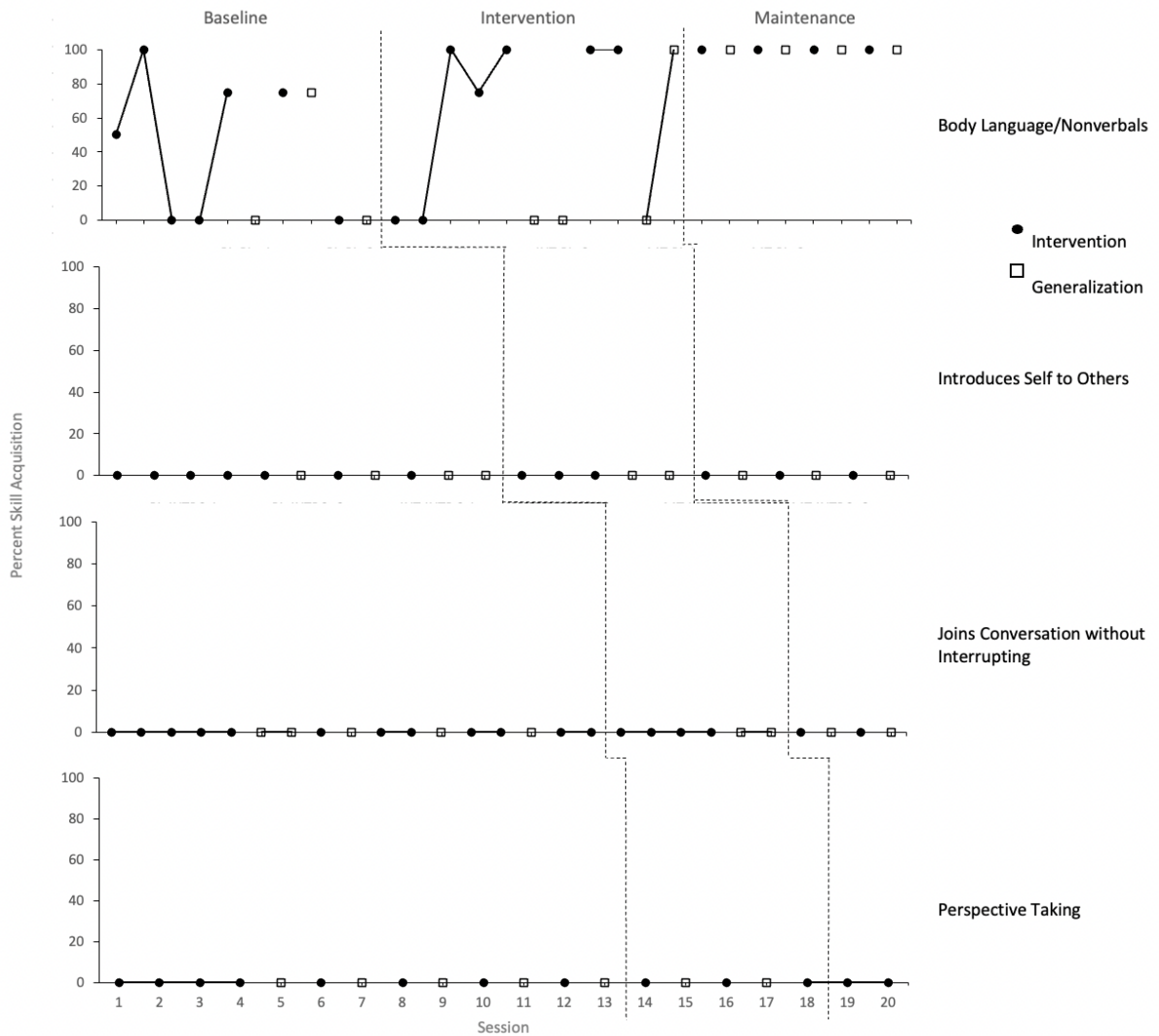
During generalization of skill acquisition in the baseline phase, Body Language/Nonverbals was found to be at inconsistent levels with a low average ( $M = 25\%$ , range = 0-100%). Similarly, Body Language/Nonverbals was found to range from low to high levels, with one final data point at 100% accuracy in the intervention phase in the general education classroom ( $M = 25\%$ , range = 0-100%). During maintenance, Ross demonstrated mastery of Body Language/Nonverbals in the classroom ( $M = 100\%$ ). Low levels of 0 were seen during baseline in the classroom for Introduces Self to Others ( $M = 0\%$ ). Ross demonstrated no skill acquisition in the intervention phase for this skill ( $M = 0\%$ ). Similarly, consistent scores of 0 were observed in the maintenance phase in the general education classroom ( $M = 0\%$ ).

Generalization of Joins a Conversation without Interrupting was observed to be consistently low in the baseline phase ( $M = 0\%$ ). Ross demonstrated no skill acquisition in the intervention phase in the classroom ( $M = 0\%$ ). Similarly, Joins a Conversation without Interrupting showed no skill acquisition in the mastery phase in the general education classroom ( $M = 0\%$ ). Perspective Taking during baseline in the classroom was observed to be consistently



low with scores of 0 ( $M = 0\%$ ). The intervention phase showed no skill acquisition in the classroom ( $M = 0\%$ ); this was also true of the maintenance phase in the general education classroom for Perspective Taking.

Figure 2. Percentage of Skill Accuracy, Ross



**Participant Three - Rachel.** Results for Rachel are presented in Figure 3. During baseline in the training setting, Rachel demonstrated inconsistent, moderate levels of Body Language/Nonverbals ( $M = 67\%$ , range 0-100%). In the intervention phase, Rachel demonstrated mastery of Body Language/Nonverbals ( $M = 100\%$ ). Similarly, mastery was observed for this skill in the maintenance phase in the training setting ( $M = 100\%$ ). Low to moderate levels of Introduces Self to Others were observed in the baseline phase in the training setting ( $M = 38\%$ ,

range 0-50%). Rachel demonstrated high levels of skill acquisition ( $M = 95\%$ , range 75-100%) in the intervention phase. During maintenance, high levels were observed for Introducing Self to Others in the training setting ( $M = 92\%$ , range 75-100%).

Rachel demonstrated low to moderate levels of Joins a Conversation without Interrupting ( $M = 22\%$ , range 0-40%) in the baseline phase in the training setting. In the intervention phase, mastery was observed for this skill ( $M = 100\%$ ). Moderate levels of Joins a Conversation without Interrupting ( $M = 75\%$ ) were observed in the maintenance phase in the training setting.

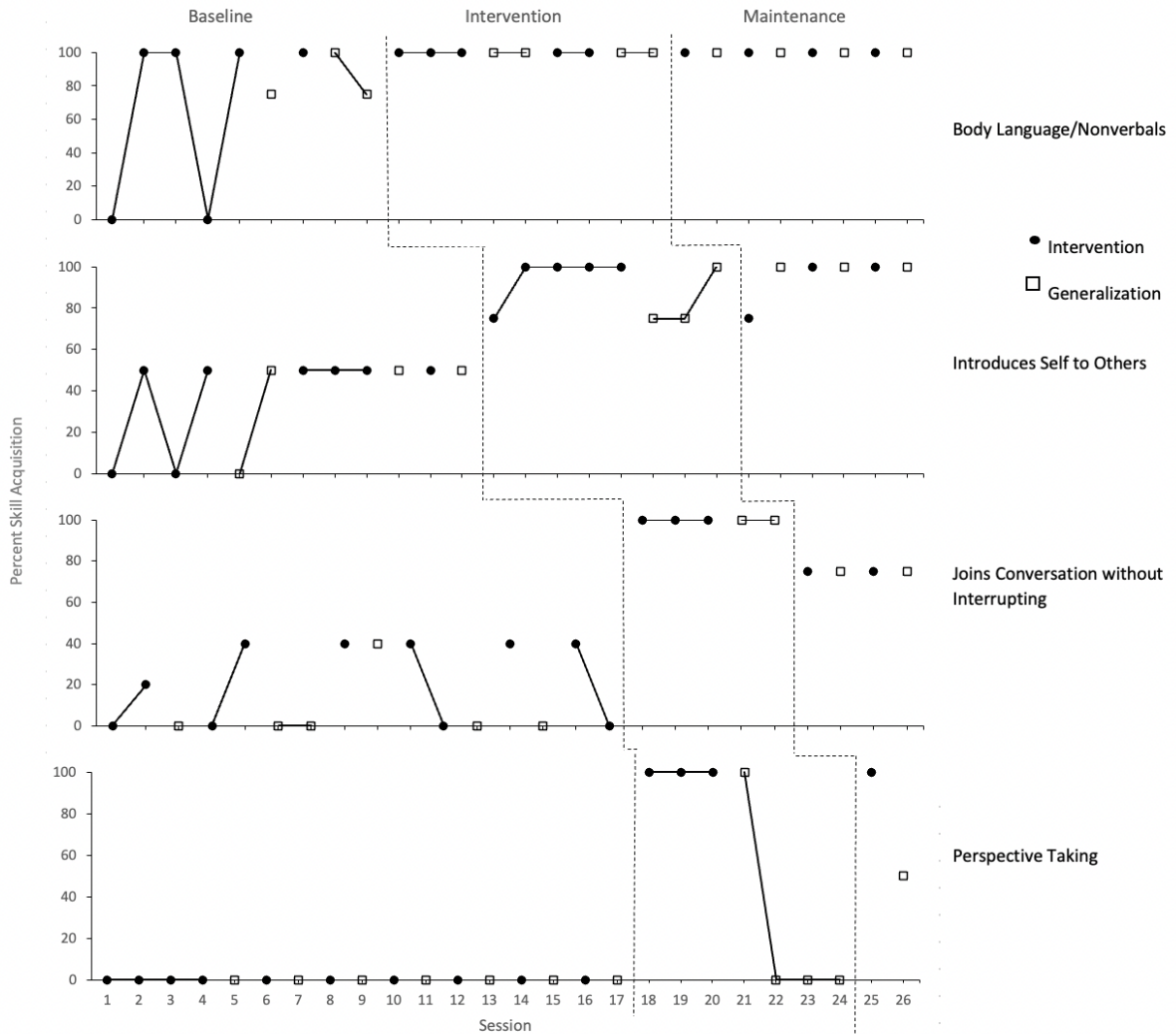
Consistently low levels of Perspective Taking were observed during the baseline phase in the training setting ( $M = 0\%$ ). Mastery of this skill was demonstrated in the intervention phase ( $M = 100\%$ ). Similarly, mastery continued for Perspective Taking in the maintenance phase in the training setting ( $M = 100\%$ ).

During generalization of skill acquisition in the baseline phase, Rachel demonstrated moderate to high levels of Body Language/Nonverbals in the general education classroom ( $M = 83\%$ , range 75-100%). Mastery was observed of this skill in the intervention phase ( $M = 100\%$ ). Rachel demonstrated continued mastery of Body Language/Nonverbals in the mastery phase in the classroom ( $M = 100\%$ ). Low to moderate levels of Introducing Self to Others ( $M = 36\%$ , range 0-50%) were observed during the baseline phase in the general education classroom. Mastery was observed of this skill in the intervention phase ( $M = 100\%$ ). Rachel continued to demonstrate mastery of Introducing Self to Others ( $M = 100\%$ ) during the maintenance phase in the classroom.

Rachel demonstrated low to moderate levels of Joins a Conversation without Interrupting ( $M = 7\%$ , range 0-40%) in the baseline phase in the classroom. In the intervention phase, this skill was observed at moderate to high levels of skill acquisition ( $M = 83\%$ , range = 75-100%).

Rachel demonstrated moderate levels of Joins a Conversation without Interrupting ( $M = 75\%$ ) in the general education classroom during maintenance. In the generalization setting during baseline, Rachel demonstrated consistently low levels of Perspective Taking ( $M = 0\%$ ). Perspective Taking was found to increase slightly but remain at low levels in the intervention phase ( $M = 25\%$ , range 0-100%). Similarly, Perspective Taking increased to moderate levels during the maintenance phase in the general education classroom ( $M = 50\%$ ).

Figure 3. Percentage of Skill Accuracy, Rachel



### Effect Sizes

Tau-U was calculated in order to supplement visual analysis with quantitative data for the single-case design of the current study. Tau-U scores indicate an effect size for each phase contrast and the total model. Scores range from 0 to 1, with 0 to 0.65 indicating a weak effect, 0.66 to 0.92 indicating a moderate effect, and 0.93 to 1.0 indicating a strong effect (Levy & Dunsmuir, 2020; Rispoli et al., 2013). TAU-U scores for TIP on Body Language/Nonverbals indicate a weak effect that was not statistically significant (TAU-U = 0.29,  $p = 0.29$ , range = 0.2-0.44). There was a statistically significant moderate effect on Introduces Self to Others (TAU-U

= 0.70,  $p < .01$ , range = 0-1), Joins a Conversation without Interrupting (TAU-U = 0.66,  $p < .01$ , range = 0-1), and Perspective Taking (TAU-U = 0.53,  $p < .01$ , range = 0-1).

**Table 1***Effect Sizes*

	Body Language/Nonverbals			Introduces Self to Others		
	TAU-U	<i>p</i> -value	CI 90%	TAU-U	<i>p</i> -value	CI 90%
Joey	0.2	.52	-0.31<>0.71	0.98	<.01**	0.53<>1
Ross	0.23	.38	-0.20<>0.65	0	1	-0.53<>0.53
Rachel	0.44	.11	-0.02<>0.90	1	<.01**	0.56<>1
Weighted Average	0.29	0.07	0.02<>0.90	0.70	<.01**	0.42<>0.93

	Joins a Conversation			Perspective Taking		
	TAU-U	<i>p</i> -value	CI 90%	TAU-U	<i>p</i> -value	CI 90%
Joey	1	<.01**	0.55<>1	1	<.01**	0.51<>1
Ross	0	1	-0.46<>0.46	0	1	-0.45<>0.45
Rachel	1	<.01**	0.50<>1	0.57	<.03*	0.14<>1
Weighted Average	0.66	<.01**	0.39<>0.93	0.53	<.01**	0.25<>0.80

\*Significant at .05 level \*\*Significant at .01 level

**Social Validity**

The Usage Rating Profile – Intervention Revised was completed by the special education teacher in the participant’s general education classroom (see Table 2). As previously stated, the Likert scale for the URP-IR ranges from 1, indicating Strongly Disagree, to 6, indicating Strongly Agree. The Acceptability scale was found to have a mean score of 4.6, indicating that the teacher found this to moderately be an appropriate intervention to address participants’ needs. The Understanding scale was found to have a mean score of 3.0, which indicates that the teacher found they only mildly understood the procedure of the intervention. The Home-School Collaboration scale was found to have a mean score of 4.3, indicating that the teacher moderately felt that effective home-school collaboration would be necessary to effectively implement this

intervention. The Feasibility scale was found to have a mean score of 3.8, which indicates that the teacher sees this intervention as slightly feasible to implement. The System Climate scale was found to have a mean score of 5.0, indicating that the teacher felt this intervention matches well with their job description and work environment. The System Support scale was found to have a mean score of 5.0, which indicates that the teacher felt they would need additional training and support to complete this intervention. Overall, the Average mean score for the URP-IR was 4.3, which indicates that the teacher moderately found the intervention to be socially valid.

**Table 2**

*Teacher URP-IR Scores*

Special Education Teacher	
Acceptability	4.6
Understanding	3.0
Home School Collaboration	4.3
Feasibility	3.8
System Climate	5.0
System Support	5.0
Average	4.3

The primary research modified the CURP in order to make it more age-appropriate for young children (see Table 3). The changes made to the CURP included reducing the number of items to four. Response options were also changed from a 4-point Likert scale to a dichotomous scale of a happy face and a sad face. Instead of requiring participants to circle numbers on a paper, participants were asked to point to their responses and a researcher recorded their



responses. Two of the three participants found the intervention to be beneficial, with mean scores of 0.75. One participant, Ross, found the intervention to not be effective or enjoyable with a mean score of 0.25. This may be due to a limited understanding of the questions, as well as a limited willingness to answer the questions.

**Table 3**

*Modified CURP Scores*

	Joey	Ross	Rachel
I was excited to go to the group.	1	0	1
This group was too much work.	0	0	0
This group helped me make friends.	1	1	1
I learned how to do new things in this group.	1	0	1
Average	0.75	0.25	0.75

**Social Functioning**

The ASSP was re-administered again following the completion of the study to help determine if the intervention changed the teacher’s perception of students’ difficulties with social skills (see Table 4). All students showed an increase in Total scores on the ASSP, indicating that the intervention may have been a factor in increasing students’ social functioning in the classroom setting. Social Reciprocity, or engaging in behaviors needed for interacting with someone socially, also saw an increase across all participants. Participation/Avoidance, or joining or avoiding social interactions with others, saw an increase in Joey and Ross. Rachel’s score on this scale remained the same. Detrimental Social Behaviors, or behaviors that may

hinder social interactions with others, saw a decrease in Joey and Rachel. Ross saw a large increase in his score on this scale, indicating a significant decrease in detrimental social behaviors.

**Table 4**

*Pre- and Post-Intervention ASSP Scores*

	Joey		Ross		Rachel	
	Pre	Post	Pre	Post	Pre	Post
Social Reciprocity	61	62	31	62	38	45
Participation/Avoidance	39	41	26	44	33	33
Detrimental Social Behaviors	33	31	22	35	34	33
Total	144	145	86	155	117	122

## **Chapter 4**

### **Discussion**

This study aimed to determine if the Teaching Interaction Procedure is an effective social skills intervention for young children with a developmental delay in social skills. A multi-probe embedded within a multiple baseline single-case design was utilized. The results and conclusions of the study will be reviewed in this chapter. Limitations of the study, as well as implications to practice, will be examined. Contributions to the literature and recommendations for future research will also be discussed.

Based on research question one, the current study provides evidence that the TIP can be effective in increasing skill acquisition in young children with Developmental Delay. Two participants, Joey and Rachel, showed relatively consistent skill acquisition with several target skills that was maintained following the removal of intervention. Tau-U scores also indicate that this intervention was effective for these two participants. This is consistent with previous research suggesting that the TIP can be effective with this population (Kassardijan et al., 2014; Lead et al., 2012; Oppenheim-Leaf et al., 2012). However, Ross, who qualitatively had a limited verbal repertoire, showed little to no skill acquisition. All of the target skills, outside of Body Language/Nonverbals, were heavily verbally loaded, which would likely be inappropriate for children with limited verbal abilities or repertoires. Ross was able to successfully engage in Body Language/Nonverbals throughout the study, as this required limited verbal skills.

This study also addresses the second research question in that generalization was accounted for in the general education classroom with teachers. Stokes and Baer (1997) state the importance of planning for and measuring generalization in that the appropriate use of skills in a variety of settings with a variety of individuals is essential for successful social interactions.

Occasionally, generalization data has either not been gathered (Beaulieu and Hanley, 2014; Robertson et al., 2003) or is measured but not planned for (Mathur & Rutherford, 1991). The TIP allows for the planning and gathering of generalization data efficiently and effectively. The task analyses that are created for target skills naturally apply to the generalization setting; task analyses can also be utilized across the individuals giving the prompts. Generalization across skills was demonstrated, indicating that this intervention may be effective in accounting for the success of generalization in a naturalistic setting with adults with whom the child typically interacts. Body Language/Nonverbals was observed to stay at mastery level across participants during the maintenance phase in the general education classroom. Consistent moderate to high levels of generalization were seen for both Joey and Rachel in the generalization setting for all other skills.

Teacher social validity, as measured by the URP-IR, was found to be rated at a moderate level, suggesting that the classroom teacher perceived the intervention to be relatively socially valid related to the difficulties the participants displayed. However, several subscales on the URP-IR indicated that the teacher would need more support if they were to implement the intervention themselves instead of the researcher. The Understanding scale was rated as a 3.0, meaning that the teacher felt they did not fully understand how the intervention was implemented. The System Support scale was rated as a 5.0, meaning that the teacher felt as if they would need additional support and training if they were to implement the intervention. These data indicate that the ease with which a teacher could pick up the intervention and run it, as with a packaged curriculum, may not apply to TIP. However, the System Climate scale, which was rated at a 5.0, indicated that the teacher felt that this intervention was appropriate for the setting and population.

Child social validity, as measured by a modified CURP, was found to be rated at varying levels. Both Joey and Rachel provided an average rating of 0.75 on a dichotomous Likert-scale of 0 to 1. The only item rated as low was “This group is too much work”. This may indicate that while the participants liked the group and felt as if they learned new things, it was more work than they preferred. It is unknown if this is due to the play-based nature of the study where they were required to sit and learn before playing with toys or if this is their true feelings about the intervention. Ross provided an average rating of 0.25. The only item rated as high was “This group helped me make friends.” Qualitatively, the classroom teacher stated that Ross began playing with more children since beginning the intervention.

### **Limitations**

Several limitations should be noted regarding the current study. The first limitation of the study is the heavily verbal nature of the skills selected for intervention. Ross’ limited verbal capacity hindered his ability to engage in three out of four target skills. This further strengthens the knowledge that this intervention is likely to be more effective with students who have relatively average verbal capabilities.

Because this study was conducted with a participant who was not able to fully engage with the intervention, the weighted average Tau-U scores may not accurately represent the true level of effectiveness of the Teaching Interaction Procedure. While the score for three of the four target skills showed significance, the effect sizes may have been larger if the scores from Ross had not been included. However, the weighted average Tau-U score for Body Language/Nonverbals is considered to be a valid representation of the effectiveness as Ross was better able to engage in the intervention with this skill. The individual TAU-U scores are likely to be more representative of the effect sizes for the current study.

The adaptation of the child social validity scale and using a self-report measure with young children greatly limits the viability of reliable results. A lack of foundational research supporting this newly created measure limits the information and generalizability that can be derived from the results. Ross struggled to answer the questions with his limited verbal capacity but was able to point to the picture response options. With all participants, it is not known how well they understood the questions and whether or not they were answering about their current feelings or their feelings about the group.

Another limitation of the study is the limited time frame in which the study was conducted. Due to the study beginning towards the end of the school year, the participants were not able to receive as many sessions as were necessary to fully generalize all skills to the classroom. It is unclear whether the intervention may have been more effective had the study had time to stay with skills that required more intervention.

### **Recommendations for Future Research**

The first recommendation is to further study the effectiveness of the Teaching Interaction Procedure with children with Developmental Delay. Replication of the current study may further support the effectiveness found at this time. Research could be expanded by conducting intervention in the general classroom setting and/or by having various individuals implement the intervention. Having teachers implement the intervention within the classroom may allow for a wider provision of services to a larger number of students who may benefit.

The second recommendation is that research be conducted to further distinguish Behavior Skills Training and the Teaching Interaction Procedure. The strong overlap in correctly labeling BST and TIP in the literature leads to confusion and misinterpretation of study results in past literature. Future research should be conducted comparing the effectiveness of BST and TIP

comparatively, to help further distinguish the differences between the two and to determine how the additional components included in TIP add to a collectively increased effectiveness (Leaf et al., 2020).

### **Conclusion**

The purpose of the current study was to determine the effectiveness of TIP when implemented with young children who have been identified as having a developmental delay in social development. Results indicated that the intervention can be effective for young children with average verbal abilities when skills are not verbally loaded; TIP was found to not be effective for children who have limited verbal repertoires when skills are verbally loaded. Similar results were found for generalization skill acquisition. Future research should seek to replicate the current study's findings as well as expand the knowledge base regarding TIP.

**APPENDIX A – Data Sheets**

**Body Language- Nonverbals**

Prompt: Engage in conversation

DATE	SESSION	PHASE	GEN	1. Make eye contact	2. Use appropriate voice ie. volume and tone	3. Use appropriate expression that matches how he/she is feeling	4. Relaxed position-shoulder down, within 6 ft. of convers. partner	% Accurate (0, 25, 50, 75, 100)	IOA%

**Introduces Self to Others**

Prompt: (name) go introduce yourself to (name)

DATE	SESSION	PHASE	GEN	1. Face the person (orient head and shoulders toward person w/in 3 sec)	2. Make eye contact w/in 5 sec and maintain for 3 sec	3. Say "hi"	4. Tell convo person what your name is	% Accurate (0, 25, 50, 75, 100)	IOA%



## Joins Conversation without Interrupting

Prompt: (name) go talk to (names of two people already together)

DATE	SESSION	PHASE	GEN	1. Face the group (orient head and shoulders toward group w/in 3 sec)	2. Make eye contact w/in 5 sec and maintain for 3 sec	3. Tap person gently to get person's attention	4. Wait to talk until person looks at you and are quiet	5. Ask what they are talking about	% Accurate (0, 25, 50, 75, 100)	IOA%

## Perspective Taking

Prompt: Sit next to student and make a sad/angry face

DATE	SESSION	PHASE	GEN	1. Face the person (orient head and shoulders toward person w/in 3 sec)	2. Make eye contact w/in 5 sec and maintain for 3 sec	3. Ask person how they feel	4. Demonstrate listening to response by sustaining eye contact or nodding head	5. Ask how you can help	% Accurate (0, 25, 50, 75, 100)	IOA%

## Appendix B – Treatment Integrity Forms

### TREATMENT INTEGRITY FOR PLAY-BASED SOCIAL SKILLS PROGRAM SPRING 2020

Skill: \_\_\_\_\_  
Observer: \_\_\_\_\_

Date: \_\_\_\_\_  
Phase: \_\_\_\_\_

This form is used to assess the level of procedural integrity for each component of the Teaching Interaction Procedure utilizing a Lag 2 schedule of reinforcement. Record if components were conducted as planned (Yes) or not conducted as planned (No) during each group instruction session; or if the day's session did not require a particular component (N/A). Ensure you are using the correct protocol to align with the correct phase.

Social Skills Training components	YES	NO	N/A
1. Probe target baseline skills (see protocol)			
2. Probe target baseline skills for generalization (see protocol)			
3. Probe target maintenance skills (see protocol)			
4. Probe target maintenance skills for generalization (see protocol)			
5. Have materials ready and place in front of group			
6. Greet group, review rules and daily schedule			
7. Introduce/review target skill and provide rationale			
8. Explain fun ties			
9. Model inaccurate/accurate use of skill			
10. Role play skill with participants. Requirement is 3 accurate demonstrations from each participant			
11. Free time for 5 minutes in classroom			
12. Conduct probes of target skills (see protocol)			
13. Provide prize to children who demonstrated mastery of target skill (see protocol)			
14. Dismiss group			
15. Place data in file and graph data			

## Appendix C – Treatment Protocol Example

# PLAY-BASED SOCIAL SKILLS

**Tasks:** To be determined based upon ASSP results

Primary DV: skill accuracy with participants in group in session

Secondary DV: skill accuracy in general education classroom

**Materials:** data sheets, integrity sheets, writing utensils, fun ties, candy

**Procedures:**

1. Welcome participants to session
2. Conduct probes for target skills in baseline
  - a. Provide cue for target skill (e.g. “Go ask Johnny to play with you”)
  - b. Allow 5-s for participant to initiate response
    - i. If no response is initiated within 5s, score all steps as inaccurate
  - c. Record skill steps accurately demonstrated on task analysis form
  - d. Record verbatim response or behavior
  - e. **DO NOT-**
    - i. Provide praise or reinforcement for accurate skill use
    - ii. Provide error correction for inaccurate skill use
  - f. **DO-**
    - i. Thank participant for compliance with probe/participation
  - g. Allow a minimum of 30s between cues for target social skills
  - h. Begin new probe for skill use
    - i. A minimum of 5 data points are required for baseline
3. Conduct probes for target skills in maintenance

- a. Provide a cue for target skill use (e.g. “Go play with Johnny”)
  - b. Allow 5s for participant to initiate response
    - i. If no response is initiated within 5s, score all skills steps as inaccurate
  - c. Record skill steps accurately demonstrated on task analysis form
  - d. Record verbatim response or behavior
  - e. **DO NOT-**
    - i. Provide praise or reinforcement for accurate skill use
    - ii. Provide error correction for inaccurate skill use
  - f. **DO-**
    - i. Provide praise for participation/compliance with probe
  - g. Allow a minimum of 30s between cues for target social skills
  - h. Begin new probe for skill use
4. Review daily schedule and group rules
  5. Introduce target skill in training
    - a. Provide rationale for skill use
  6. Go over discrete skill steps for target skill
  7. Explain use of ‘fun ties to participants
    - a. A fun tie will be provided following accurate demonstration of target skill during free play
    - b. Tell participants that if 3 fun ties are earned at the end of free play, the participant may access a prize
  8. Teaching Interaction Procedure for target skill
    - a. Model inaccurate demonstration of skill (model a yes and no situation)

- i. Allow participants to identify what was inaccurate about the model
  - b. Model accurate demonstration of skill
    - i. Allow participants to identify what was accurate about the model
    - ii. DO:
      - 1. Provide error correction for incorrect responses
      - 2. Provide praise for accurate responses
  - c. Allow participants to role-play skill with other participants in group
    - i. Provide error correction for missed skill steps or inaccurate demonstrations
    - ii. Provide praise for accurate skill demonstrations
    - iii. Before ending TIP, make sure each child demonstrates skill accuracy 3 times
- 9. Transition kids back to general education classroom and wait 5 minutes to begin probes
- 10. Conduct probes of target skill (*conducted by researchers*)
  - a. Provide cue for target skill use (e.g. go play with Johnny)
  - b. Allow 5s for participant to initiate response
    - i. If no response is initiated within 5s, score all steps as inaccurate
  - c. Record skill steps accurately demonstrated on task analysis form
  - d. DO NOT-
    - i. Provide error correction for inaccurate skill demonstrations
  - e. DO-
    - i. Provide bracelets contingent upon demonstration of 100% skill accuracy
  - f. Allow a minimum of 30s between cues for target skill

- g. Begin new probe for skill use
    - i. Conduct a minimum of 5 intervention probes based on stability of skill accuracy data within group
  - h. Repeat steps 2A-F and 3A-F with general education classroom teacher in generalization settings to conduct baseline and generalization probes
  - i. Phase changes will be dependent upon mastery of target skill, defined as 3 consecutive probes of 100% accuracy
  - j. Should mastery be demonstrated:
    - i. Ensure that a minimum of 3 probes, dependent upon stability, are immediately collected for all other skills (i.e. BL and MT phase skills).  
Minimum of 3 probes is inclusive of probes conducted at the beginning of the session
11. Provide prize to participants who accumulated a minimum of 3 bracelets
12. Dismiss group

**Data Management:** Place all data in case summary file and graph data daily

**IOA:** Minimum of 30% of all probes

**Procedural Integrity:** assess during all sessions

Appendix D – Autism Social Skills Profile

**Autism Social Skills Profile**

*Scott Bellini*

Child's Name: \_\_\_\_\_  
FIRST MIDDLE LAST

Birthdate: \_\_\_\_\_ Age: \_\_\_\_\_ Sex: Female Male Today's Date: \_\_\_\_\_  
MO. DAY YEAR MO. DAY YEAR

School: \_\_\_\_\_ Grade: \_\_\_\_\_

Your Name: \_\_\_\_\_  
FIRST MIDDLE LAST

Relationship to Child: Mother Father Guardian Other \_\_\_\_\_

Street Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Phone: ( \_\_\_\_\_ ) \_\_\_\_\_

The following phrases describe skills or behaviors that your child might exhibit during social interactions or in social situations. Please rate **HOW OFTEN** your child exhibits each skill or behavior independently, **without assistance from others** (i.e., without reminders, cueing and/or prompting). You should base your judgment on your child's behavior over the last **3 months**.

Please use the following guidelines to rate your child's behavior:

Circle **N** if your child **never** or **almost never** exhibits the skill or behavior.

Circle **S** if your child **sometimes** or **occasionally** exhibits the skill or behavior.

Circle **O** if your child **often** or **typically** exhibits the skill or behavior.

Circle **V** if your child **very often** or **always** exhibits the skill or behavior.

**Please do not skip any items.** If you are unsure of an item, please provide your best estimate. You may use the "Brief Description" section to provide additional information on the particular skill or behavior. For instance, if your child will exhibit a particular skill or behavior more frequently when cueing or prompting is provided, or when interacting with adults rather than peers, please make note of this in the "Brief Description" section.

## Autism Social Skills Profile

	Never	Sometimes	Often	Very often	
	N	S	O	V	
<b>Skill Area</b>	<b>How Often</b>				<b>Brief Description</b>
Invites Peers to Join Him/Her in Activities	N 1	S 2	O 3	V 4	
Joins in Activities With Peers	N 1	S 2	O 3	V 4	
Takes Turns During Games and Activities	N 1	S 2	O 3	V 4	
Maintains Personal Hygiene	N 1	S 2	O 3	V 4	
Interacts With Peers During Unstructured Activities	N 1	S 2	O 3	V 4	
Interacts With Peers During Structured Activities	N 1	S 2	O 3	V 4	
Asks Questions to Request Information About a Person	N 1	S 2	O 3	V 4	
Asks Questions to Request Information About a Topic	N 1	S 2	O 3	V 4	
Engages in One-On-One Social Interactions With Peers	N 1	S 2	O 3	V 4	
Interacts With Groups of Peers	N 1	S 2	O 3	V 4	
Maintains the "Give-and-Take" of Conversations	N 1	S 2	O 3	V 4	
Expresses Sympathy for Others	N 1	S 2	O 3	V 4	
Talks About or Acknowledges the Interests of Others	N 1	S 2	O 3	V 4	



## Autism Social Skills Profile

	Never	Sometimes	Often	Very often	
	N	S	O	V	
<b>Skill Area</b>	<b>How Often</b>				<b>Brief Description</b>
Recognizes the Facial Expressions of Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Recognizes the Nonverbal Cues, or "Body Language" of Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Requests Assistance From Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Understands the Jokes or Humor of Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Maintains Eye Contact During Conversations	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Maintains an Appropriate Distance When Interacting With Peers	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Speaks With an Appropriate Volume in Conversations	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Considers Multiple Viewpoints	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Offers Assistance to Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Verbally Expresses How He/She Is Feeling	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Responds to the Greetings of Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Joins a Conversation With Two or More People Without Interrupting	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Initiates Greetings With Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	

## Autism Social Skills Profile

<b>Never</b>	<b>Sometimes</b>		<b>Often</b>		<b>Very often</b>
<b>N</b>	<b>S</b>		<b>O</b>		<b>V</b>
<b>Skill Area</b>	<b>How Often</b>				<b>Brief Description</b>
Provides Compliments to Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Introduces Self to Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Politely Asks Others to Move out of His/Her Way	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Acknowledges the Compliments Directed at Him/Her by Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Allows Peers to Join Him/Her in Activities	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Responds to the Invitations of Peers to Join Them in Activities	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Allows Others to Assist Him/Her With Tasks	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Responds to Questions Directed at Him/Her by Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Experiences Positive Peer Interactions	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Compromises During Disagreements With Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Responds Slowly in Conversations	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Changes the Topic of Conversation to Fit Self-Interests	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Misinterprets the Intentions of Others	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	

## Autism Social Skills Profile

	<b>Never</b>	<b>Sometimes</b>	<b>Often</b>	<b>Very often</b>	
	<b>N</b>	<b>S</b>	<b>O</b>	<b>V</b>	
<b>Skill Area</b>	<b>How Often</b>				<b>Brief Description</b>
Makes Inappropriate Comments	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Engages in Solitary Interests and Hobbies	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Ends Conversations Abruptly	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Fails to Read Cues to Terminate Conversations	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Exhibits Fear or Anxiety Regarding Social Interactions	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Experiences Negative Peer Interactions	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Engages in Socially Inappropriate Behaviors	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Exhibits Poor Timing With His/Her Social Initiations	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Is Manipulated by Peers	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	
Engages in Solitary Activities in the Presence of Peers	<b>N</b> 1	<b>S</b> 2	<b>O</b> 3	<b>V</b> 4	

## Appendix E – Usage Rating Profile – Intervention Revised



# URP-Intervention

**Directions:** Consider the described intervention when answering the following statements. Circle the number that best reflects your agreement with the statement, using the scale provided below.

	Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
1. This intervention is an effective choice for addressing a variety of problems.	1	2	3	4	5	6
2. I would need additional resources to carry out this intervention.	1	2	3	4	5	6
3. I would be able to allocate my time to implement this intervention.	1	2	3	4	5	6
4. I understand how to use this intervention.	1	2	3	4	5	6
5. A positive home-school relationship is needed to implement this intervention.	1	2	3	4	5	6
6. I am knowledgeable about the intervention procedures.	1	2	3	4	5	6
7. The intervention is a fair way to handle the child's behavior problem.	1	2	3	4	5	6
8. The total time required to implement the intervention procedures would be manageable.	1	2	3	4	5	6
9. I would not be interested in implementing this intervention.	1	2	3	4	5	6
10. My administrator would be supportive of my use of this intervention.	1	2	3	4	5	6
11. I would have positive attitudes about implementing this intervention.	1	2	3	4	5	6
12. This intervention is a good way to handle the child's behavior problem.	1	2	3	4	5	6
13. Preparation of materials needed for this intervention would be minimal.	1	2	3	4	5	6

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		Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree
14.	Use of this intervention would be consistent with the mission of my school.	1	2	3	4	5	6
15.	Parental collaboration is required in order to use this intervention.	1	2	3	4	5	6
16.	Implementation of this intervention is well matched to what is expected in my job.	1	2	3	4	5	6
17.	Material resources needed for this intervention are reasonable.	1	2	3	4	5	6
18.	I would implement this intervention with a good deal of enthusiasm.	1	2	3	4	5	6
19.	This intervention is too complex to carry out accurately.	1	2	3	4	5	6
20.	These intervention procedures are consistent with the way things are done in my system.	1	2	3	4	5	6
21.	This intervention would not be disruptive to other students.	1	2	3	4	5	6
22.	I would be committed to carrying out this intervention.	1	2	3	4	5	6
23.	The intervention procedures easily fit in with my current practices.	1	2	3	4	5	6
24.	I would need consultative support to implement this intervention.	1	2	3	4	5	6
25.	I understand the procedures of this intervention.	1	2	3	4	5	6
26.	My work environment is conducive to implementation of an intervention like this one.	1	2	3	4	5	6
27.	The amount of time required for record keeping would be reasonable.	1	2	3	4	5	6
28.	Regular home-school communication is needed to implement intervention procedures.	1	2	3	4	5	6
29.	I would require additional professional development in order to implement this intervention.	1	2	3	4	5	6

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### Appendix F – Children’s Usage Rating Profile

	I Disagree	I Agree
1. I was excited to go to the group		
2. This group was too much work		
3. This group helped me make friends		
4. I learned how to do new things in this group		

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