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Investigating Stay, Play, & Talk: A Peer-Mediated Social Skills Intervention for Young Children with Autism Spectrum Disorder and Other Social Challenges

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Two preliminary pilot phases of a peer-mediated social skills program—Stay, Play, and Talk—within inclusive early years settings in Ontario, Canada, investigated changes in observed social interactions and perceived social skills. In Phase 1, a single-subject AB design demonstrated increases in total social interaction units for two of three kindergarten participants during structured activities, and pre- and post-intervention educator ratings demonstrated small social skill increases with peers for all three participants. In Phase 2, pre- and post-

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intervention educator ratings for nine participants in a group design demonstrated increases in play interaction and disruption and decreases in play disconnection, with a large effect size for increases in play interaction. Findings suggest that program participation within structured settings may support social skills gains for children with social communication difficulties.

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Abstract

Two preliminary pilot phases of a peer-mediated social skills program—Stay, Play, and Talk—within inclusive early years settings in Ontario, Canada, investigated changes in observed social interactions and perceived social skills. In Phase 1, a single-subject AB design demonstrated increases in total social interaction units for two of three kindergarten participants during structured activities, and pre- and post-intervention educator ratings demonstrated small social skill increases with peers for all three participants. In Phase 2, pre- and post-intervention educator ratings for nine participants in a group design demonstrated increases in play interaction and disruption and decreases in play disconnection, with a large effect size for increases in play interaction. Findings suggest that program participation within structured settings may support social skills gains for children with social communication difficulties.

The prevalence of autism spectrum disorder (ASD) has increased globally over the past 50 years, with an estimated 1 in 160 children affected worldwide (World Health Organization, 2017). ASD is characterized by impairments in social interaction and communication, and by the presence of repetitive and restrictive interests (American

Psychiatric Association, 2013). As the prevalence of ASD continues to rise, more children with ASD are being included in early learning and care settings. It is essential, then, for effective intervention strategies to be developed and implemented in these inclusive settings, so that children with and without a diagnosis of ASD can thrive.

Peer-mediated strategies represent a category of inclusive interventions with a substantial body of research showing their data-driven effectiveness as a method for increasing social interaction skills in children with ASD (e.g., Chang & Locke, 2016; DiSalvo & Oswald, 2002; McConnell, 2002; Strain & Bovey, 2011). In the National Standards Project (Phase 2), peer training packages such as peer-mediated approaches were categorized as established interventions. Peer-mediated approaches involve teaching peers how to interact with a child with a disability, followed by adult-led support to prompt peers to use these taught skills in naturally occurring, everyday situations (Laushey & Heflin, 2000). Using peer-mediated social skills in such a manner has been shown to effectively increase the social interactions of children with ASD and other disabilities and their peers, and vice-versa (McConnell, 2002; Roberston et al., 2003). Yet, one area that continues to be an issue in this research is the long-term maintenance of peer-based skills in the absence of prompting from educators (Chang & Locke, 2016). In addition, concerns have been raised regarding the ability of younger children to be appropriate “trainers” of children with disabilities when the social skills of these typically developing students are just emerging (McGee, Almeida, Sulzer-Azaroff, & Feldman, 1992).

The use of peer-mediated approaches with preschool-aged children is a growing area of research; however, compared to studies on school-age participants, less research has been conducted with this younger age group (e.g., Chan et al., 2009; English, Goldstein, Shafer, & Kaczmarek, 1997a; Hughtett, Kohler, & Raschke, 2013; Kohler, Greteman, Raschke, & Highnam, 2007; Robertson, Green, Alper, Schloss, & Kohler, 2003). The Learning Experiences and Alternative Program for Preschoolers and Their Parents (LEAP) model is one example of a peer-mediated early intervention that has been researched for over two decades and is considered “an evidence-based inclusion model for the education of young children with ASD” (Strain & Bovey, 2011, p. 133). Unlike most other programs with peers as intervention agents that are completed in developmentally segregated settings and focus on one-to-one instruction, the LEAP model provides children with ASD with daily exposure to typically developing peers and favours incidental teaching opportunities (Strain & Bovey, 2011; Strain, Wolery, & Izeman, 1998). The Buddy Skills Training Program, one of the most widely cited approaches to peer-mediated social skills development, is another example of a program that focuses on the interactions between children with disabilities and children without. It was created by English, Shafer, Goldstein, and Kaczmarek (1997b) to teach skills to facilitate positive interactions between dyads of peers: preschool-aged children both with and without disabilities. The program included four primary components: (a) peer sensitization to teach awareness and promote positive attitudes toward children with disabilities; (b) environmental set-up to apply these strategies across the daily routine; (c) specific skill instruction for dyads to interact; and (d) minimal use of adult prompting. The three specific primary skills taught in Step 2 of the program included *staying with your friend*, *playing with your friend*, and *talking with your friend*. English et al. (1997a)

evaluated the Buddy Skills Training Program in an inclusive child care centre with 10 children with disabilities and 5 typically developing peers. Peers were taught sensitivity training, specific skill training, and to *stay*, *play*, and *talk* with their pre-arranged “buddy.” In an inclusive setting, children were paired with a buddy who rotated throughout the day and, if that peer met a set criterion for number of interactions with the target student, were reinforced by the classroom teacher. A substantial increase in communication acts—defined as requests for attention, requests for action, comments, responses, and other rote vocalizations or assertives—with both the peers and target children was found, producing increased communication acts. Kohler et al. (2007) also evaluated the Buddy Skills Training Program using triads of one child with autism and a pair of peers, finding increased social overtures from peers toward the child with ASD; however, a reciprocal increase in interactions toward the peers was less evident. Additionally, trained peers were found to maintain interactions toward the child with ASD in the absence of prompts from the educators.

The Canadian Context

In the Canadian context of this current research project, the prevalence rate of ASD is 1 in 66 children between the ages of 5 and 17 (Public Health Agency of Canada, 2018). In Canada, each of 13 provinces or territories is responsible for setting jurisdictional guidelines for the education and care of children in formal settings beyond the home environment. Apart from unique, federally based programs with funding for Indigenous students, education is provincially directed and funded with little federal oversight (Dworet & Maich, 2007). Thus, it is important to understand the specific context in which education—and research—take place. Further, in the mid-sized city in southwestern Ontario, Canada, where this specific research project was implemented, some significant changes were occurring. First, Ontario was in the process of implementing full-day, play-based kindergarten with the support and collaboration of registered early childhood educators. Child care centres, previously supported through the provincial Ministry of Children and Youth Services, had recently transitioned to the Ministry of Education, becoming responsible for child care and education in all formal settings from birth through Grade 12 (Ontario Ministry of Children and Youth Services, 2010). Although the inclusion of children with special needs is a legislated expectation in the school system (Ontario Ministry of Education, 2013), it is not yet so directed for child care centres (Crowther, 2010). Even in the context of this lack of legislative support, case-by-case supports such as early interventions do exist from initiatives in individual child care organizations (Crowther, 2010; Underwood, 2012a, 2012b); and a “commitment to quality programs for all children” is part of Ontario’s vision to support and educate early learners (Ontario Ministry of Education, 2012, p. 5). *Stay, Play, and Talk* is an example of such a local initiative implemented in a single geographical locale. Needs expressed by local organizations and previous research stating the importance of peer socialization for early learners in inclusive environments (Barton & Smith, 2015; Stanton-Chapman & Brown, 2015) have provided a foundation for *Stay, Play, and Talk*.

Stay, Play, and Talk

The primary purpose of this two-phase pilot study was threefold: to introduce the the Stay, Play, and Talk program presented in manual form for ease-of-use in child care and school environments; to determine whether peer interactions with children with social skill difficulties, characteristics of ASD, or diagnosis of ASD increased in naturalistic, inclusive environments when all peers and educators in the environment were trained and programs were implemented on site; and to ascertain best-practice methodology for inclusive settings. This version of Stay, Play, and Talk expands on previous literature with the implementation of an adapted, interactive version of the Buddy Skills Training Program and the use of it in two types of inclusive early learning settings: child care centres and full-day Year-1 to -2 kindergarten classrooms. Materials and resources developed through the Buddy Skills Training Program (English et al., 1997b) were expanded and updated with activities, songs, scripts, and visuals incorporated into a manual to assist educators unfamiliar with peer-mediated social skills development. The intervention was named Stay, Play, and Talk to relate to English et al.'s (1997b) successful peer training strategies to stay, play, and talk with your friend; however, the environment and set-up in which this occurred varied from previous related research (i.e., all children received the training program). Following their respective research ethics clearance, two pilot phases were implemented, in turn; this allowed the program to be first introduced on a small scale focused specifically on children with a diagnosis of ASD, and then studied in a broader context with children having less diagnostic-specific social difficulties.

General Methods

Intervention

A four-step procedure is described below for implementing Stay, Play, and Talk, as described in a manual for educators (All Kids Belong, Fanshawe College, & Thames Valley Children's Centre, 2011) based on the Buddy Skills program (English et al., 1997b).

Step 1: Preparing the environment and the child. In this step, environments are examined to ensure environmental readiness skills were addressed. These criteria were developed into a checklist including, where relevant, ensuring that children with ASD or other social-communication challenges are in close proximity to peers in the majority of situations and that activities occur throughout the day in which the target children and peers interact together (Table 1).

Step 2: Diversity awareness. Group members—including the target child(ren) and typically developing peers—engage in an initial lesson on diversity awareness. Similar to peer sensitization described by English et al. (1997b), this adult-led direct instruction focuses on similarities and differences using commercially published, topic-specific picture books with diversity-based messages such as *We're Different, We're the Same* (Kates, 1992), as well as concept-based follow-up activities as instructional strategies. Literature and follow-up instructions are sent home following these initial lessons, and educators are provided with comprehensive resources and embedded coaching to continue diversity awareness in day-to-day instruction.

Table 1.
Environmental Checklist for Stay, Play, and Talk Program Readiness

Question
1 Is the child ready to participate in this program?
1.1 Does the child have a functional means to communicate with others?
1.2 Does the child more than one aggressive behaviour toward peers per month?
1.3 Is the child motivated to interact with others?
2 Is the environment set up to foster peer interactions?
3 Are there opportunities for group activities?
4 Are educators willing to prompt through peers and reduce adult support?
5 Do peers see the child in a positive light?

Note. Adapted from All Kids Belong, Fanshawe College, & Thames Valley Children's Centre (2011).

Step 3: Stay, play, and talk: Following the initial diversity awareness lesson in Step 2, similarly structured direct instruction lessons focused on three concepts are taught bi-weekly over approximately six weeks. As outlined in the Buddy Skills Program (English et al., 1997b), children are taught to stay, play, and talk with their friends. Teaching of each of these three components takes approximately 30 minutes, including direct group instruction, brainstorming, reading, modeling, role playing, singing, and formative assessment (see Table 2 for activity samples). Reinforcement of these concepts takes places in child-led, centre-based learning (e.g., role play, imaginative play, structured play) with classmates.

Table 2.
Sample Pedagogical Strategies for Implementation of Stay, Play, and Talk
Peer-Mediated Strategy for Preschool-Aged Children

Steps to Stay, Play, and Talk	Sample Pedagogical Strategies
Step 1: Preparing the Environment and the Child	Create Peer Proximity: Include the child with disabilities in the same environmental space as peers (i.e., in the circle, at the table at snack, etc.) and ensure the child is not sitting next to an adult.
Step 2: Diversity Awareness	Apple Activity: Use different shapes and colors of apples to physically compare the physical differences. When they are cut open show how they are the same inside just like people who may have physical differences.
Step 3: Stay, Play, and Talk	Lessons: Provide five interactive lessons, each with description of the skills, multiple exemplars and non-exemplars, modeling, and an activity to apply the skill. Present lessons sequentially, one every two weeks: 1. Diversity Awareness, 2. Stay with your Friend, 3. Play with your Friend, 4. Talk to your Friend, 5. Stay, Play, & Talk Review. Follow-up with activities and lessons a minimum of three times per week.
Step 4: Prompting Through Peers	Prompting Through Peers: Prompt peers to utilize the stay, play, and talk skills taught in each of the lessons and follow-up. Promote generalization of the skills from the lessons into natural settings.

Note. Adapted from All Kids Belong, Fanshawe College, & Thames Valley Children's Centre (2011).

Step 4: Prompting through peers. While children are trained in staying, playing, and talking, educators are trained and coached by investigators. The focus of educator training is prompting through peers as well as prompting and reinforcing stay, play, and/or talk skills, so that few or no interactions occur between adults and the child with ASD other than initial guiding to a peer and support in the back-and-forth turn-taking of interactions, as needed. Each site develops and customizes a group reinforcement contingency procedure dependent on preferences of the educators (e.g., the educator chooses the reinforcement method and the children in the classroom choose the reinforcers). At the conclusion of these four steps, follow-up activities, refreshers, and review materials are left with each site to complete one concept-based activity per week to review and practise staying, playing, and talking to peers multiple times per week.

Phase 1

Phase 1 Methods

Participants. Three children with ASD between 4 and 6 years of age participated in Phase 1. The inclusion criteria included a parent-reported diagnosis of ASD, autistic disorder, Asperger's disorder, or pervasive developmental disorder—not otherwise specified (PDD-NOS); being primarily verbal communicators utilizing full sentences (five or more words in a phrase); being supported in an inclusive setting; and the absence of aggressive behaviours toward peers (this was defined as one or fewer instances of engaging in kicking, hitting, spitting, or verbal aggression toward a peer per month). Given the diagnoses, participants had difficulty with social communication skills and had repetitive and restricted patterns of interest. Following research ethics board review and clearance at Fanshawe College, recruitment was carried out by direct contact through community-based consultants working with these individuals with ASD.

The first child, Bradley (children's names are pseudonyms to protect confidentiality), was a 5-year-old male with a *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV-TR; American Psychiatric Association, 2000) diagnosis of autistic disorder, enrolled in a Year-1, full-day kindergarten program for five months prior to this study. Prior to kindergarten, Bradley was enrolled in an intensive behavioral intervention (IBI) therapeutic program for two years, an Ontario Ministry of Education-funded program providing 20 to 40 weekly hours of individual therapy utilizing an applied behavior analysis (ABA) approach. Bradley was included with his peers for 100% of the day; however, he was removed occasionally by an educational assistant during anxiety-provoking times, including morning drop-off, and other significant transitions such as the beginning of lunch, during assemblies, etc.

The second participant, Lance, was a six-year-old male with a DSM-IV-TR diagnosis of PDD-NOS, enrolled in Year-2, full-day kindergarten combined with Bradley's Year-1 kindergarten group. He attended school during the previous year on a part-time basis. Lance also spent 100% of his days included with peers, and was only removed to quiet spaces in the school environment on an as-needed basis by the educational assistant when demonstrating behaviours consistent with rising anxiety.

The third student, Tanner, was a four-year-old male with a DSM-IV-TR diagnosis of autistic disorder, completing his second year in the local IBI program from the same ministry provider as Bradley. In the first 18 months of the IBI program, the therapy sessions took place in his home, but thereafter in a child care centre, as primary goals for the intervention included peer socialization and interaction. Tanner was included with his peers for approximately 80% (5.5 hours) of the day and removed for individualized, therapeutic IBI intervention for the remaining time (1.5 hours) focused on communication skills, imitation, self-help, early cognitive skills, and social skills.

Setting. Two sites in southwestern Ontario were selected for this first phase: one Year-1 to -2 kindergarten classroom and one child care centre. The first site was Bradley and Lance's elementary school. Because of the small class sizes in this rural school, this inclusive classroom was a combined Year-1 and Year-2 kindergarten class with teacher-led, goals-based learning. Sixteen students and three adults were present in this setting, including an Ontario certified teacher, a part-time educational assistant (EA), and a registered early childhood educator. Supporting this classroom was a second, part-time EA and a resource teacher who assisted educators with Lance and Bradley's goals. All five of the classroom members received the intervention training. The second site—Tanner's child care centre—was a preschool playroom where all 16 children in the setting were above 30 months of age. The centre was an urban, mid-sized private centre located downtown in a transient, lower-income neighborhood. Children were grouped by age in the playroom, with eight from the older-aged group (38–50 months) taking part in the program. Two children in this group had diagnosed disabilities, including Tanner. Two registered early childhood educators were assigned to this older group, joined by a program assistant to support the children with disabilities. Of this group of three adults at the second site, the two registered early childhood educators and the program assistant received the intervention training.

Experimental design. This phase of the Stay, Play, and Talk intervention was evaluated utilizing two methods: (a) pre-post questionnaires of educators' perceptions of the targeted children's social skills, and (b) a single-subject AB design across the three target children to measure social interaction skills.

Educator questionnaires. A pre-post research design was implemented to examine potential change in perceived social skills for the target children by the involved educators (Isaac & Michaels, 1995). During baseline data collection, all eight educators (five from the Year-1 to -2 kindergarten classroom; three from the child care centre) completed a pre-test social questionnaire related to the social skills' repertoire of each target child participant (see Table 3 for sample items). This questionnaire consisted of 47 items in nine social categories, developed from the social skills segment of the developmental framework presented in *Early Learning for Every Child Today* (ELECT; Best Start Expert Panel on Early Learning, 2007) and utilized in both child care and kindergarten settings. A four-point Likert-like rating scale (1 = *never or almost never*; 2 = *sometimes or occasionally*; 3 = *often or typically*; 4 = *very often or always* [exhibits the skill or behaviour]) was imposed on each of the social skills categories, creating a researcher-developed tool for examining social skills development. Following implementation of Stay, Play, and Talk and maintenance period, the same educators completed an identical questionnaire for post-test ratings.

Table 3.
Researcher-Created Social Skills Questionnaire: Phase 1

Skill Area	Indicators
1. Making Friends	<ul style="list-style-type: none"> • Seeking out others to play with • Offering play materials and roles to others • Playing with others co-operatively • Inviting others to play • Exchanging ideas, materials, and points of view with others • Sustaining play with others
2. Conflict Resolution & Social Problem-Solving Skills	<ul style="list-style-type: none"> • Beginning to express what they want and are thinking and feeling • Regulating emotions in order to solve conflicts • Beginning to attend and listen to peers • Beginning to identify solutions to conflict • Beginning to identify consequences • Making decisions and choices and accepting the consequences
3. Peer Entry Group Skills	<ul style="list-style-type: none"> • Observing before entering play • Offering objects or ideas that are relevant to play • Entering play by assuming available roles
4. Helping Skills	<ul style="list-style-type: none"> • Offering assistance • Identifying the emotions of others • Regulating their own behaviour in the face of the needs of others • Offering comfort • Being generous
5. Interacting Positively & Respectfully	<ul style="list-style-type: none"> • Beginning to show respect for other children's belongings and work • Playing with others who have differing abilities and characteristics • Beginning to become aware of stereotypes found in books, etc. • Beginning to develop ideas of and to practise co-operation, fairness, and justice • Learning music and art forms from a variety of cultural, racial, and ethnic groups • Using artifacts from a variety of cultural, racial, and ethnic groups in socio-dramatic play
6. Co-operating	<ul style="list-style-type: none"> • Exchanging ideas and materials during play • Taking part in setting and following rules, and inviting others to join them in play • Listening, thinking, and responding appropriately as others speak during group time • Engaging in group decision making with voting and accepting that the majority vote will be followed by the entire group
7. Empathy	<ul style="list-style-type: none"> • Sharing emotions, communicating, and expressing feelings with adults and peers • Sharing experiences, relating and respecting each other • Beginning to see the world from another's perspective • Beginning to identify with others • Putting themselves in the other person's shoes • Seeing an injustice and taking action to change it

Table 3, continued

8. Taking Another Person's Point of View	<ul style="list-style-type: none"> • Describing their ideas and emotions • Recognizing that other people have ideas and emotions • Understanding the ideas and emotions of others • Beginning to accept that the ideas and emotions of others may be different from their own • Adapting behaviour to take other people's points of view into consideration • Beginning to respond appropriately to the feelings of others • Beginning to take another's point of view • Engaging in the exchange of ideas and points of view with others
9. Interacting with Adults	<ul style="list-style-type: none"> • Approaching adults as sources of security and support • Engaging adults in activities in positive ways • Seeing adults as resources in exploration and problem solving

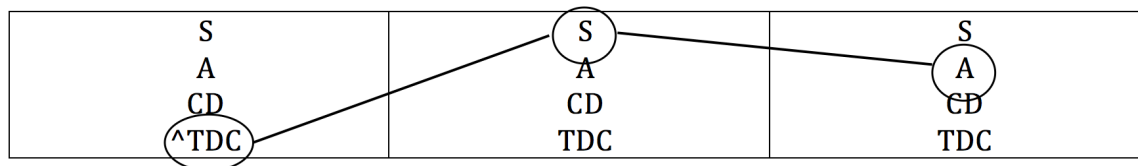
Note. Adapted from Best Start Expert Panel on Early Learning (2006).

Social interaction skills. A single-subject, AB design was utilized to understand the impact of the intervention on the social interaction skills of the three participants. Five student data collectors enrolled in a related graduate certificate program at the local community college collected direct observational data across the 8-week intervention period, supervised by the primary investigator. Because of the naturalistic implementation of the program and irreversibility effect, this study design was limited to an AB design rather than a reversal or multiple-baseline design: the latter designs could perhaps be more easily implemented in a clinical setting (Cooper, Heron, & Heward, 2007).

On four separate days across two weeks, baseline data were collected of all observed social interactions made by or toward the target children before Stay, Play, and Talk implementation, according to the following schedule: Data collection occurred twice weekly, in three 10-minute intervals across two hours per day, and during pre-arranged situations in which opportunities for social interaction skills existed; more specifically, during either structured activities (e.g., games or centre-based activities with educator-assigned goals), informal interactions with peers (e.g., snack time), or child-directed play. Event recording was used during each 10-minute interval to track the frequency of the target child's interactions, capturing all socialization with adults and peers utilizing English et al.'s (1997b) Tracking Social Interactions data collection sheet (Figure 1). Although the area of interest was primarily peer-to-peer interactions, comparing with adult-to-child interactions can be helpful in assessing changing patterns overall.

Training was provided to the children in each classroom through the four steps of the program, as explained in the section General Methods, above. Step 1 (preparing the environment and child) was completed during a 1.5-hour staff meeting in which the program was explained and brainstorming took place regarding changes to occur to ensure the environment was conducive to the program. Teaching of Step 2 (diversity training) and each component in Step 3 took approximately 30 minutes each, for a total of four discrete lessons. Step 4 occurred in all settings, naturally after the program began.

Figure 1. Elements from English et al.'s (1997b) Tracking Social Interactions Data Collection Sheet



Note: S = subject; A = adult; CD = child with disability; TDC = typically developing child; ^ = initiator
 ^TDC to S to A is an example of 1 unit of interaction with 3 conversational turns initiated by the TDC. *P* would be added for a prompt; *NV* would be added for a non-verbal interaction. Adapted from English et al. (1997b).

Observations of social interactions were carried out in the same manner during the intervention phase as they had been during the baseline phase. Data were collected two days per week for six weeks. In these instances, centres in the classroom were open for children to engage in play of their choice, and thus the observations began. Children then chose to participate in independent activities during these sessions where the educator had arranged for the data collector to collect data on social, play-based opportunities in the natural environment. All interactions between the target child and both peers and adults were measured using a data sheet like the one depicted in Figure 1. Data were then collated after the observation period to determine the total number of interaction units (operationalized as reciprocal interaction that continued with a peer until a break of five or more seconds), communication attempts to the target child, communication attempts from the target child, and the number of prompts that adults provided peers and the target child.

Interobserver agreement. All student data collectors were trained on the data collection method and practised skills using play-based scenarios until a 90% agreement rate was achieved. Using the interval-by-interval calculation for inter-observer agreement (IOA; Cooper et al., 2007), IOA was collected throughout the baseline and intervention for 33% of the data collection periods across participants. The IOA was completed live and on site; a second observer came to the classroom every second to third visit and completed two to three 10-minute intervals with the primary data collector. The IOA for this project across subjects included a total average of agreement between observers of 80%, 83%, and 85% respectively, for each participant, all meeting or exceeding the minimally acceptable IOA rate of 80% (O'Neill, McDonnell, Billingsley, & Jenson, 2011).

Phase 1 Results

Results from the single-subject AB design from the three participants with ASD in both the child care centre and classroom site were collated, graphed, and visually analyzed. Data periods were removed for situations in which the child participated in an activity with no opportunity for observable socialization (e.g., washroom visits, working on a computer with headphones). Each social interaction unit was defined as the sum of social communication acts between the target child and peer or adult, made up of one or more interactions, with an interaction ending when 10 seconds passed since the last interaction or when an adult restarted the initiation with a new prompt. Overall, the mean social interactions occurring throughout the day increased for two of three participants (Figure 2).

Figure 2. Mean Number of Social Interaction Units Per Day Across 10-Minute Data Collection Intervals, by Participant

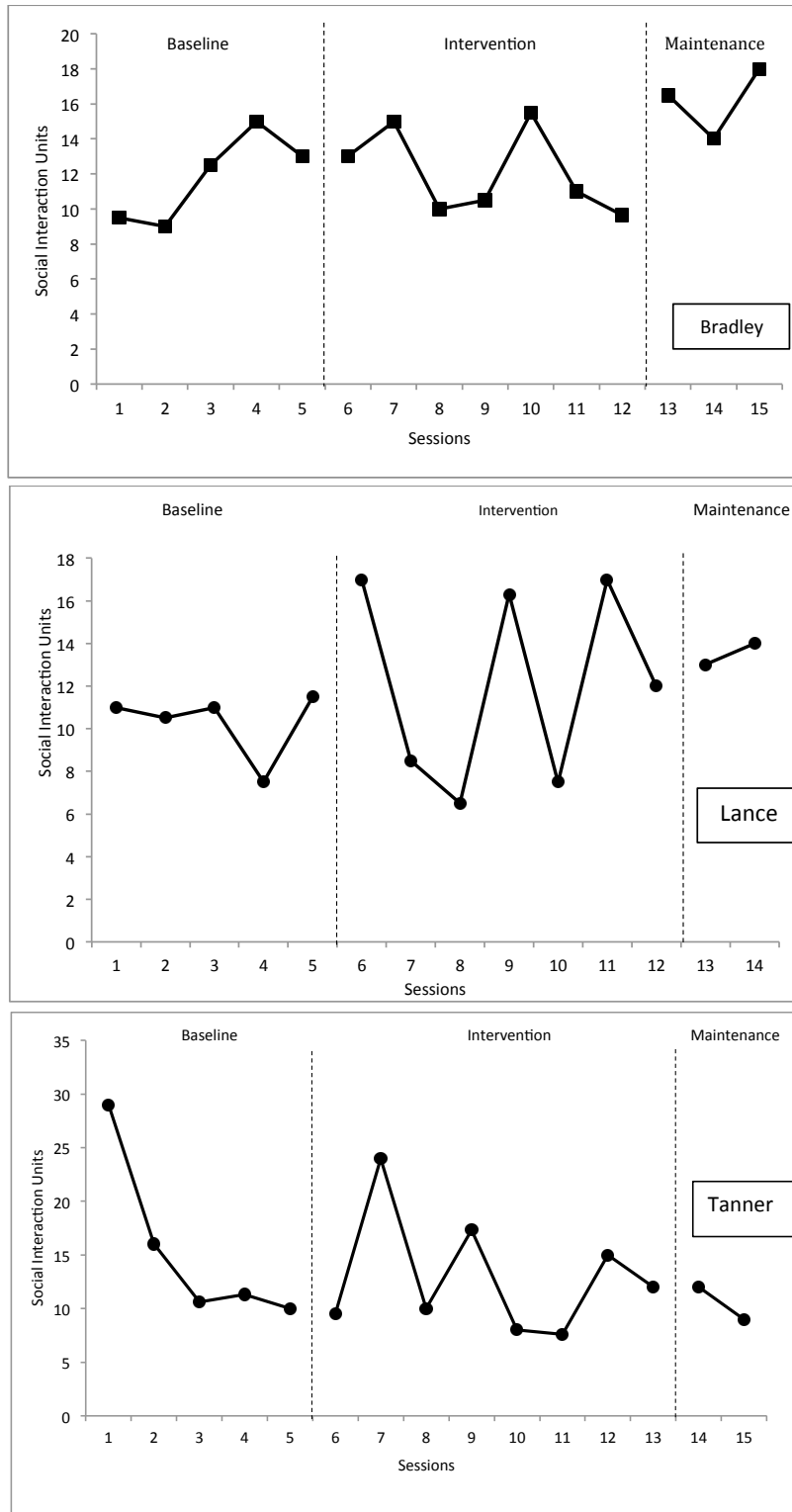
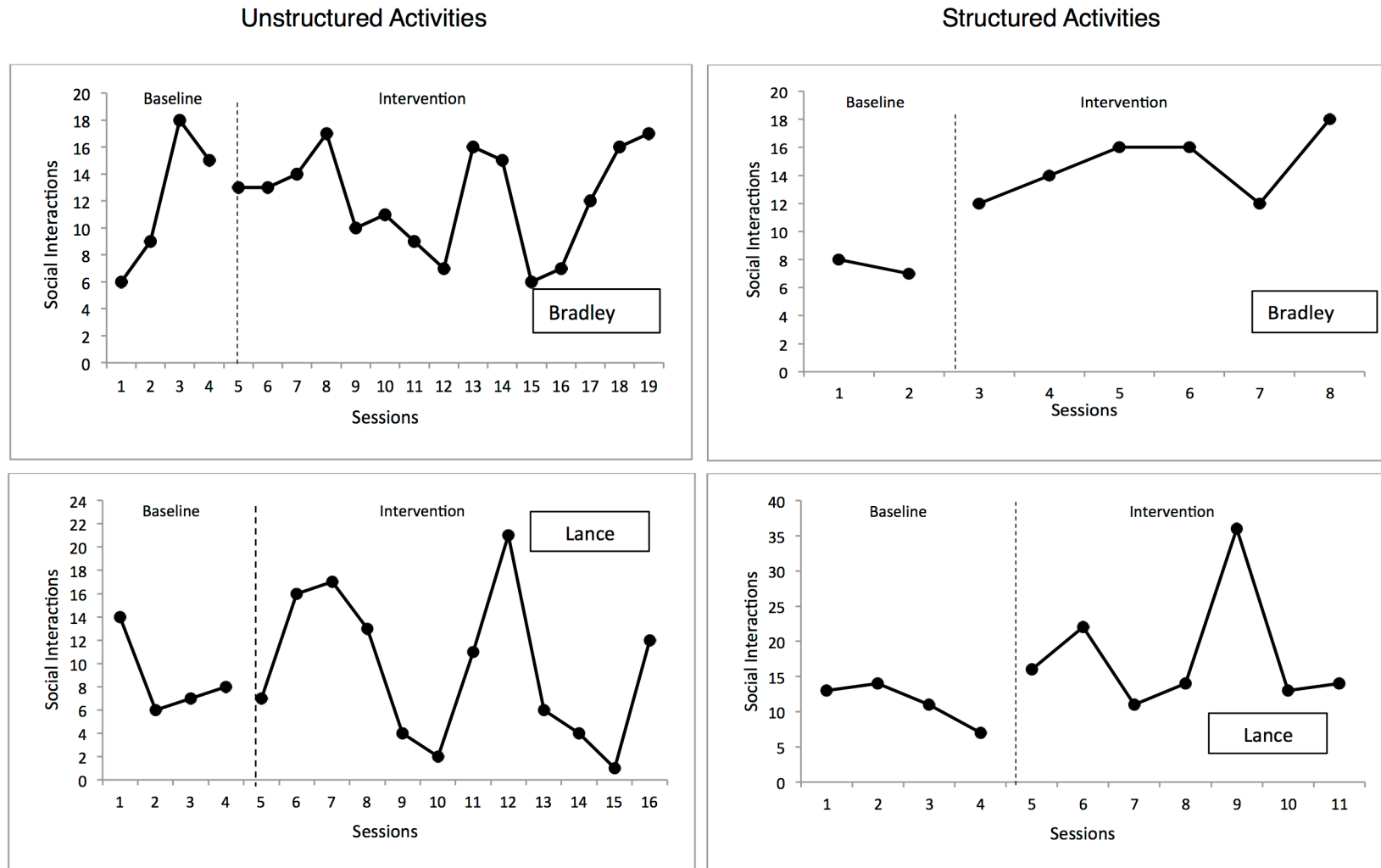


Figure 3. Total Number of Interactions Per Data Collection Period in Unstructured and Structured Activities for Two Participants* with ASD in a School-Based Setting

*Note: Data for only two of the three participants are included, as there were too few structured periods in the third participant's child care centre (purely play-based) to make into a graph.



Both Bradley and Lance demonstrated visual level changes (i.e., from lower to higher levels) in total social interaction units during structured activities; however, maintenance did not occur. The results were highly variable, appearing to increase after the training lesson and failing to maintain throughout the week. This is consistent with observer reports that educator fidelity with follow-up lessons and prompts was inconsistent. Bradley and Lance also demonstrated an increase in total social interactions in structured activities when compared with unstructured activities. Both participants demonstrated a small, steady increase in total social interaction units throughout the study as compared to unstructured settings. Small but highly variable increases occurred in social interaction units when both Bradley and Lance initiated conversation or when typically developing peers initiated conversation in the classroom (see Figure 3). In Tanner's child care centre there were not sufficient opportunities for structured activities to accurately compare, as the majority of periods across the day involved child-directed play choices. In these periods, children and peers were actively engaged primarily in pretend play, encouraged to choose their play preferences, engage with peers, and generate possibilities in the natural environment (Best Start Expert Panel on Early Learning, 2007).

Figure 4. Mean Skill Area Scores Across Phase-1 Participants on an *ELECT*-Based Questionnaire from Pre-test to Post-test with the *Stay, Play, and Talk* Program Intervention

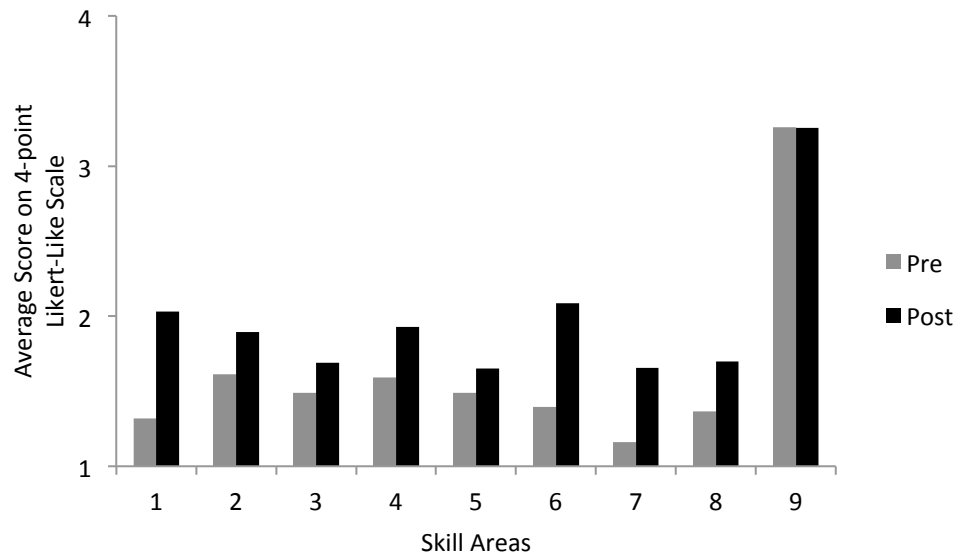


Figure 4. Wilcoxon Signed-Rank Test demonstrated an increasing trend pre-test to post-test across subcategories. 1 Making Friends; 2 Conflict Resolution; 3 Peer Group Entry Skills; 4 Helping Skills; 5 Interactive Positively; 6 Cooperating; 7 Empathy; 8 Taking Another Person's Point of View; 9 Interacting with Adults.

Results from the pre- and post-test questionnaire were compared using the Wilcoxon Signed-Rank Test, a non-parametric alternative to the *t*-test for comparing related conditions (Field, 2009). These educator-completed questionnaires demonstrated an increase in the target children's social skills (subcategories: [a] making friends; [b] conflict resolution and social problem-solving skills; [c] peer group entry skills; [d] helping skills; [e] interacting positively and respectfully; [f] co-operating; [g] empathy; [h] taking another's point of view; and [i] interacting with adults) across subsets from pre-

to post-intervention measures. Mean scores across participants increased at post-test in all subcategories with the exception of the *interacting with adults* subset (Figure 4). This is consistent with the intervention protocol, which aims to increase peer interactions while maintaining or decreasing adult interactions. The greatest increase occurred in the *making friends* and *co-operating with peers* subsections, also consistent with intervention goals.

Phase 1 Discussion

Results from this phase of the study demonstrate the variable impact of a peer-mediated social skills training program across ages and settings for preschool-aged children with ASD. Overall, the results of the Stay, Play, and Talk peer-mediated intervention showed an increase in the number of social interactions for two of three subjects, but only in structured settings. Specific interaction units initiated to and by peers were variable. Both of the older participants in Phase 1, Bradley and Lance, showed a small, yet variable increase in total social interaction units in structured activities; whereas Tanner did not show an overall change in his social interactions. In addition, for both Bradley and Lance, the structured nature of the kindergarten centre—especially during times when there were opportunities to play structured games, engage in structured centres, and complete specified educator-led goals—was likely advantageous; and their change in total social interaction units occurred in these settings. In contrast, there was high variability and little change in their social interactions in unstructured child-led time periods. This could be a result of the varied nature of child-led activity in a classroom environment or the fit with the learning characteristics of this population, given that some research has shown that children with ASD often need to be taught social skills explicitly and benefit from structure and routine (Williams White, Keonig, & Seahill, 2007). This finding is in contrast with some previous studies that have suggested that unstructured times allow for more spontaneous communicative opportunities for children with ASD (Chiang, 2009; Drain & Engelhardt, 2013) and that structured activities may actually be associated with an increase in challenging behaviour (Chiang, 2008). For this first phase of the study, the results of questionnaires created from the ELECT framework for child development in Ontario for preschool-aged children in child care and kindergarten demonstrated a small but positive gains in social skills. Educators perceived the children's social interaction skills with peers as increasing for all three subjects, and did not perceive change in interactions with adults. Given that the goal of peer-mediated approaches is to increase the interactions with peers and lessen reliance on adults, these results are appropriate; however, continued questions remain regarding the magnitude of the impact for individuals with ASD in kindergarten and child care settings.

Phase 2

Phase 2 Methods

Participants. Following research ethics board review and clearance through Fanshawe College, recruitment was expanded in this phase. In Phase 2, educators, in collaboration with parents, identified children with (a) social skill difficulties, (b) characteristics of ASD, or (c) a diagnosis of ASD. The educators chose students in their classrooms who they identified as meeting these criteria, and additional documentation for diagnosis was not provided. Due to confidentiality decisions in ethical

clearance, researchers were not provided with additional information on the children's diagnosis and did not observe participants directly in the setting. Both educators and parents completed pre-test and post-test measures for nine children in toddler and preschool playrooms (19 months to 5 years of age) at one local child care site.

Setting. The same geographical region of southwestern Ontario was selected for Phase 2 as in Phase 1; however, potential settings focused on child care centres. A full-day, multi-site group training was carried out jointly facilitated by researchers and community professionals, including a brief introduction to the planned research. Child care centres expressed their interest in research participation by entering contact information on a sign-up form. Letters of recruitment and letters of consent were then delivered to those 12 sites, including multi-site agencies, early childhood educators, and parents. Six sites expressed initial interest; however, only one agency provided completed assessments along with signed forms from parents, educators, and the relevant site director. The participating agency's site involved three classrooms with nine participants at a specialized child care centre connected to a children's intervention agency. The agency provides emergency supports to parents, and part of this support involves long- or short-term placement in the connected child care playrooms. Most children attending the child care centre come from families facing crises, in low-socioeconomic situations, or accessing emergency services. There were numerous educators in each playroom with an average student to educator ratio of three-to-one.

Experimental design. Phase 2 was evaluated utilizing pre- and post-test questionnaires of educators' perceptions of the targeted children's social skills focusing on interactive peer play to examine the utility of group implementation. The educators completed the pre-test measure prior to implementation of the intervention, and the post-test measure four months after implementation.

Intervention. The four-step procedure for implementing Stay, Play, and Talk (All Kids Belong, Fanshawe College, & Thames Valley Children's Centre, 2011; see General Methods, above) was repeated in Phase 2. As described in the manual, it was carried out as a class-wide intervention and was introduced to all children in the classrooms that participated. As in Phase 1, Step 1 (preparing the environment and child) was completed with educators in breakout sessions during the initial training; Step 2 (diversity training) and each component of Step 3 (Stay, Play, and Talk instruction) took approximately 30 minutes per lesson in four separate lessons for a total of approximately two hours; and Step 4 occurred naturally, across the day, in all settings. The lessons were taught to all children in the classroom and generalized with all children through prompting through peers.

Peer-play measure. Peer-play social skills were measured using the teacher version of the Penn Interactive Peer Play Scale (PIPPS-T; Fantuzzo et al., 1995; McWayne, Sekino, Hampton, & Fantuzzo, 2002). The PIPPS-T is a 32-item rating scale measured on a 4-point Likert-type scale (1 = *never*, 2 = *seldom*, 3 = *often*, 4 = *always*). Evidence for the convergent and divergent validity of the PIPPS-T, in addition to high internal consistency and a reliable factor structure with three dimensions—Play Interaction, Play Disruption, and Play Disconnection—has been established (Coolahan, Fantuzzo, McDermott, & Mendez, 2000; Fantuzzo, Coolahan, Mendez, McDermott, & Sutton-

Smith, 1998). The preschool PIPPS-T structure of the subscales (McWayne et al., 2002) was used for this study: Play Interaction (9 items); Play Disruption (15 items; one item reverse-scored and repeated from Play Interaction); Play Disconnection (10 items; one item repeated from Play Disruption). The Play Interaction subscale represents co-operative, prosocial behaviours. Sample items include, “helps other children” and “helps settle peer conflict.” The Play Disruption subscale represents aggressive, antisocial behaviours. Sample items include, “does not take turns” and “cries, whines, shows temper.” Finally, the Play Disconnection subscale represents withdrawn behaviours and an absence of participation in peer play. Sample items include, “wanders aimlessly” and “refuses to play when invited.” Internal consistency estimates for the current sample (Cronbach’s α) were high: Play Interaction = .88; Play Disruption = .89; Play Disconnection = .83. In this study, raw subscale total scores were calculated, and the total scores were converted to standardized T-scores (with a mean of 50 and a standard deviation of 10), as indicated in the preschool PIPPS-T published factor structure and directions for use (McWayne et al., 2002).

Phase 2 Results

Pre- and post-intervention data were collected for all nine participants. Standardized T-scores for the subscales were calculated for use for analysis and interpretation (Table 4). For both the pre- and the post-test, all of the subscale T-scores were within one standard deviation of the mean (i.e., falling between 40 and 60), indicating that the participants demonstrated an average level of each play dimension. The PIPPS-T subscales were normally distributed, and the means were examined along with effect sizes for the change from the pre- to post-test. In particular, it was hypothesized that participation in Stay, Play and Talk would result in increases in Peer Interaction, and decreases in Play Disruption and Play Disconnection. On average, the teachers reported increases (with a large effect size) for the children on the Play Interaction subscale of the PIPPS from pre- to post-intervention. The Play Disruption subscale increased from pre- to post-intervention, with a small effect size. For the Play Disconnection subscale, the teachers reported decreases (with a small effect size) for the children from pre- to post-intervention.

Table 4.
PIPPS-T Subscale Score Descriptive Statistics and Effect Sizes

PIPPS-T Subscales	Pre-test (<i>n</i> = 9)			Post-test (<i>n</i> = 9)			Cohen’s <i>d</i>
	Mean	<i>SD</i>	Range	Mean	<i>SD</i>	Range	
Play Interaction	45.85	6.42	35–56	54.15	11.51	37–76	0.89
Play Disruption	47.68	6.04	37–55	52.32	12.81	31–78	0.46
Play Disconnection	52.14	9.31	42–72	47.86	10.75	35–63	0.42

Phase 2 Discussion

The results for the second phase of the study further support this intervention. An increase on the peer interaction subscale and decrease on the play disconnection subscale show that the participants' play strengths and involvement in prosocial behaviours increased throughout the study, while their withdrawal behaviours and non-participation in peer play decreased—both as hypothesized, and providing evidence of enhanced peer play behaviours. Nevertheless, the increase in the play disruption subscale does not support enhanced peer play behaviours. It is possible that the increase in play disruption, although small, may be due to the stay, play, and talk intervention's focus on positive peer social interactions rather than on peers trying to decrease negative social behaviours. In these instances, educators would not be encouraged to have peers assist in problem behaviours. Rather, the program focused on peers assisting each other in interactions and remaining engaged in these interactions, which are more accurately measured in the Play Interaction and Play Disconnection subscales.

The primary characteristics of ASD include a lack of social communication and failure to develop age-appropriate peer relationships (American Psychiatric Association, 2013). Previous research in peer-mediated approaches with preschool-aged children has focused on individuals with other developmental disorders, who may not have the marked deficit and delay in social interaction skills as found in ASD. In one previous study, Kohler et al. (2007) examined the effects of a peer-mediated approach on one child with autism. Similar to the first phase of this study, results were seen primarily in the peers' social interactions toward the target child; whereas the target child's social overtures were variable, and only increased slightly. This combination of findings may imply that when implementing this approach—especially in a naturalistic, inclusive environment—individuals with ASD may need more structure and intensity in order to experience the same impact as that found in previous studies with individuals with developmental delays. Similarly, the small increases in the educator questionnaires may be a result of the relatively short, eight-week program that was delivered to a group of students with significant social delays as part of their diagnosis.

These results demonstrated that many of the communicative interactions between target children their peers varied depending on which educator was present, which children surrounded the target child, and in which activity the children were engaged. In many child care and kindergarten environments, the approach would often be led in a class-wide, inclusive manner; however, additional intensive instruction may be needed for students who have communication deficits. This study differed from previous research noted above (see Introduction) in that peers were not paired with a small number of trained peers (in dyads or triads); rather, all children received the training program (English et al., 1997a; Hughtett et al., 2013; Kohler et al., 2007). This inclusive approach is a strong fit for inclusive environments, capitalizing on the typical approach to teaching social skills to all students; however, from the results of the first phase, it appears that an additional level of structure is needed to create more significant positive impacts on social interaction skills.

Past research has also questioned the use of a peer-mediated approach for preschool-aged children due to the emerging social skills of the typically developing peers themselves

(McGee et al., 1992). This hypothesis was partially supported in the first phase of this study when the two older subjects (5- and 6-year-olds) demonstrated an increased frequency in social interaction units, whereas the younger child (a 4-year-old) did not show changes in number of interactions. It is important to note that the second phase of the study did not support this hypothesis; rather, an increase in Play Interaction and decrease in Play Disconnection were demonstrated in a preschool-aged setting. In a meta-analysis of social skills interventions, Wang and Spillane (2009) demonstrated that peer-mediated strategies for children with autism initially appeared to be evidence-based, but low-to-questionable results in single-subject behavioural observation of social skill improvement using percent of non-overlapping data points (PND) procedures question the effectiveness of the approach. It is important to continue to investigate the approach in naturalistic, inclusive, play-based approaches with preschoolers with ASD or other social-communication challenges to determine which factors may be producing these tentative results.

Summary and Concluding Discussion

This two-phase pilot implementation of Stay, Play, and Talk contributes to the literature related to children with social communication difficulties—including children with ASD—in various ways. First, they provide some insight into how outcomes may look in inclusive settings with early learners, such as child care and kindergarten contexts rather than in clinical settings. Second, they provide a foundation of methodological decision making around both behavioural research and group design research and their utility in these settings to examine change in social skills. Phase 1 demonstrated increases in social interaction units for two of three kindergarten participants with ASD in the context of structured activities, as well as minor social skill increases for three kindergarten participants in a single-subject AB design. Phase 2 results for nine child care participants identified as having social-communication difficulties showed increases in play interaction and disruption and decreases in play disconnection, with a notable large effect size for play interaction.

Limitations

Limitations in the current study included the variability in the settings, the children who were present, and the activities that occurred across settings and days, and the use of a one-time-only, researcher-created questionnaire for Phase 1. Variability in specific settings made it difficult to maintain consistent times and activities to collect data, including fidelity data. At times, stable baseline data were not achieved. Another limitation occurred with educators implementing and following through on the intervention as prescribed in the manual. In both phases, educators commented verbally that it was difficult to follow through and maintain the follow-up activities of the program. Therefore, it is unclear whether some of the variability in the results and the lack of maintenance in the participant's social interactions were due to low treatment fidelity. It is also important to note that pre- and post-intervention questionnaires in both phases were completed by the educators involved in the interventions, which could have resulted in a confirmation bias (Forstmeier, Wagenmakers, & Parker, 2017). Nonetheless, the comments made by educators implementing the approach in a naturalistic

environment most likely reflect a common reality for many educators in group settings with early learners.

Implications for Practice

These results could be timely in the Ontario context given the transformation in the education system with the recent unfolding of the province-wide, full-day, two-year kindergarten program. The structured nature of kindergarten in Phase 1 of this multi-phase pilot study provided a unique setting that fostered the social interactions of two children with ASD, but that may be discordant with the movement toward play-based, student-led kindergarten classrooms. Such movement will provide the opportunity to further examine the peer-mediated approach within inclusive settings.

These results also demonstrate that in addition to the structured nature of Stay, Play, and Talk, there is also a possible need to structure specific play periods to practise the skill before working on generalization to periods of child-led play. As implemented in varied studies (e.g., English et al., 1997a; Hughtett et al., 2013; Kohler et al., 2007), a significant amount of structure was offered around play opportunities when target children were paired with a buddy. Continued research may help to indicate an approach that will allow practitioners to obtain the largest gains in their inclusive classrooms while increasing the social opportunities and social interactions of preschool-aged children with ASD.

Educator training is essential when implementing any peer-mediated approach in child care and kindergarten classrooms. Consistency is needed in the practice of prompting through peers rather than going directly to the target child to prompt for social interactions with peers. In the present study, the participants' social interactions increased initially after each training session, but maintenance was difficult to sustain between sessions. Educators commented that it was difficult to integrate and implement a structured program while coaching peers in interacting with the target child in a classroom promoting play-based, child-led activities; student data collectors also noticed this inconsistency. When adults prompt through peers, it allows all children in the class to apply the skills that they learned in the lesson. Throughout this current study, the number of prompts through peers did not substantially increase.

Conclusions and Next Steps

Our pilot study of the Stay, Play, and Talk peer-mediated approach applied the program in a natural, play-based, preschool setting, and created variable results that indicate a need for additional research across participants and settings. The study suggested two tentative findings that may be considered in the peer-mediated social skill literature for preschool-age children: (a) age of preschool children might play a role in determining the fit of a peer-mediated approach; and (b) the structure, intensity, and teaching methodology utilized may be important to consider when using this approach for individuals with social communication difficulties. In particular, an evaluation of the specific type of activities, amount of adult-led involvement, and variables in child-directed play should be assessed separately to understand which components may be influencing social interactions for preschoolers with social difficulties, characteristics of ASD, or a diagnosis of ASD. The current tentative findings must also be replicated with

additional children and in additional settings to better evaluate the effectiveness of the developed program. The use of a control group in the future would also allow the program's impact to be more clearly understood. A clear measurement of treatment fidelity and measurement of the adult's role and interactions would assist in future research and also in removing confounding variables and other limitations in the current study and the literature as a whole (Hughett et al., 2013). Research tends to vary with the role of the adults, prompts provided, and the frequency of involvement, which can be influential in the social interaction outcomes for children with social difficulties. Several specific adult interaction strategies were identified in previous research and could be worth examining more specifically in future research, such as waiting for the child to initiate communication, imitating or repeating the child's communication acts, and commenting on the child's actions (Kossyvaki, Jones, & Guldberg, 2016; McAteer & Wilkinson, 2009).

Stay, Play, and Talk based on the Buddy Skills Program (English et al., 1997b) has potentially promising effects for increasing social opportunities and social interactions with children with social difficulties and their peers in a naturalistic environment. Results indicate that structured settings, often more frequent in kindergarten classrooms, may be key to increasing social interaction in this population of preschool-aged children. For students with social difficulties, we recommend providing many opportunities for structured activities coupled with the intense, frequent implementation of Stay, Play, and Talk programming within each day. In addition, and an updated research and implementation framework is suggested for this population of young children in inclusive, play-based environments.

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