Peer Play Interventions To Support the Social Competence of Children with Autism Spectrum Disorders

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ABSTRACT

Children with autism spectrum disorders (ASD) have difficulty connecting with others because they often lack the communication, social interaction, and play skills necessary for developing relationships with their peers. This article highlights the characteristics of four peer intervention programs described in the literature that have been successful in facilitating the social connections between children with ASD and their typical peers. The environments established for intervention, the role of the typical peer, and the role of the adult are described across the four programs. A fifth peer intervention program is introduced that focuses on establishing peer connections in the home of the child with ASD while facilitating bids and responses for behavior regulation, social interaction, and joint attention in the child with ASD and his or her typical peer in the context of play. Implications for practice are provided as clinicians consider the role peer mediation has in intervention planning and implementation for children with ASD.

KEYWORDS: Intervention, autism spectrum disorders, peer mediation, children

Learning Outcomes: As a result of this activity, the reader will be able to (1) explain the characteristics of effective peer intervention programs; (2) identify the role of the typical peer in peer intervention; and (3) describe adult intervention strategies used to scaffold social interactions among children with ASD and their typical peers.

Engaging in social interactions with peers is a priority for children with autism spectrum disorders (ASD). Peer intervention programs for children with ASD have been in the forefront of best practice to support the social interaction needs of this population and have been the focal point of extensive research.[1–12] Woven through these programs are a common set of skills: socialization, communication, and play with peers. These core skills are linked and provide children with the underpinnings necessary for interacting across a range of settings. The purpose of this manuscript is to highlight the unique contributions of research-based intervention programs that strategically incorporate socialization, communication, and play to support the successful interactions between children with ASD and their typical peers. Further, we present a description of a peer play intervention project currently being implemented in the home environment of children with ASD. A primary goal of peer intervention models has been to develop, support, and increase the levels of socialization children with ASD experience with their typical peers. To achieve this end, opportunities to engage with peers have been created in the classroom. Zanolli and colleagues[13] found an increase in social interactions among children with ASD and their typically developing peers when the typically developing peers were involved in a peer training program. Roeyers[14] developed a program in which dyads of children with ASD and typically developing peers participated in 30-minute play sessions in their school setting. Findings indicated an increase in time spent together and duration of interactions, increased initiations and responsiveness to partners, as well as increased prosocial behaviors on the part of the child with ASD. Gonzalez-Lopez and Kamps[15] also created a program where typically developing peers were trained in the social skills that would support their interactions with children with ASD. They focused on such skills as greeting, initiating, sharing, turn-taking, and requesting. They implemented these strategies during free play periods in the classroom. They found that the frequency and duration of play increased for students participating in this project. Sharing has also been the focus of classroom-based investigations.[16]

When intervention was embedded in naturally occurring play in an integrated preschool program, children with ASD were able to increase their physical and verbal sharing skills.

Studies also have examined the social interactions of children with ASD in community-based programs. Zercher and coworkers[12] employed an Integrated Playgroup Model at a church Sunday school. They taught typical peers attention-directing behaviors (showing, giving, pointing to objects, and attention-getting verbalizations) to help the child with ASD direct his or her attention to objects in the environment and ongoing actions. They found that typical peers increased their use of these behaviors and as an outcome the children with ASD increased their joint attention, play skills, and verbalizations directed to their peers during play. Schleien and associates[17] developed a program for children with ASD to participate in a museum-based art program with children who were typically developing. The findings of this program suggested that children who were typically developing directed communication toward children with ASD during art activities, thereby creating a basis for social interaction.

A key component of socialization is the ability to communicate. Communication is the medium (both verbal and nonverbal) that provides access to social interactions. Prizant et al[18] emphasize that intervention should improve the range of communicative means or behaviors used by children. These can include vocal, gestural, or verbal means. Intervention should also improve children's use and understanding of a full range of communicative functions, such as commenting, requesting, acknowledging, informing, and so on. Prizant and colleagues also stress that intervention should be framed within communicative events that are "dyadic and reciprocal" in nature. In other words, they should occur within the stream of naturalistic interactions. Further, it is not just the use of communicative means and functions but also the need to understand, process, and respond appropriately to those used by peers that are embedded in ongoing interactions. Only by actively engaging in interactions with peers can communication be situated in context for children with ASD.

Acquisition of interactive play skills has also been an aim of peer intervention programs. Wolfberg[19,20] suggests play is comprised of both symbolic and social components. The symbolic component cuts across three dimensions: exploratory play, simple pretense, and advanced pretense. In exploratory play a child engages in manipulating toys, while in simple pretense a child uses toys in accordance with their actual function. In advanced pretense a child engages in symbolic play. Wolfberg relates the social component of play to a child's distance from and level of engagement with his/ her peer play partner during play activities. This ranges from a child playing by him/herself (solitary play), to observing peers at play but not participating in the play (onlooker play), to playing beside a peer (parallel play), to playing next to a peer with a similar play focus but not engaging in the play with the peer (common focus), and finally to playing together with the peer toward a common goal (cooperative play).

The result of integrating all the aspects of social interaction, communication, and play is the quality of engagement that occurs. The quality of engagement can be measured by the duration and frequency of the interactions between the child with ASD and the typical peer.[6–8,15] Another important indicator of successful play and sociocommunicative interactions is joint attention,[21] a frequent goal of successful intervention. Effective peer intervention programs are designed to facilitate engagement and foster opportunities to establish joint attention. Specific characteristics that define effective peer intervention programs are explored further in the paragraphs that follow.

CHARACTERISTICS OF SUCCESSFUL PEER INTERVENTION PROGRAMS

Prizant and colleagues[18] present several principles that should be reflected in peer intervention programs. First, peer intervention programs should occur within the flow of *naturalistic interactions*. By doing so, children come to understand the nature and the reciprocity of interaction. It is important to *engineer environments* in such a way that events can be consistent and predictable, thereby facilitating

learning. There should be a *control for novelty* that is responsive to the child's ability to cope with unique situations. Interactions should reflect *shared control and reciprocity* so that the child with ASD can be a partner in the interaction rather than having the peer dominate the sociocommunicative turns. During interactions, children with ASD may display *unconventional verbal and social play behaviors.* In peer intervention programs, peers must learn to ascertain what the child with ASD is communicating and respond accordingly. The everyday activities that become the focal point of peer intervention should provide *motivation to communicate*, that is, they should be selected on the basis of the high interest and enjoyment they bring to the partners. Further, the activities should provide occasions for children to use a variety of *communicative intents* across numerous turns and appropriate to the context. Lastly, *the role of the adult* in the interactions must be taken into consideration. The adult can scaffold, model, and create communicative opportunities.

Kohler and Strain[5] offer additional perspectives on the design and implementation of peer intervention. They suggest peer intervention programs should be comprehensive, intensive, practical, and effective. To provide maximum impact, peer programs must be comprehensive and consistently implemented across all contexts, activities, and times of the day. Opportunities for engagement must be intensive or frequently occurring over time. Activities and opportunities to interact must be practical and should target skills that children can readily incorporate into their daily routines. Last, effectiveness can be judged by whether the implementation of the peer intervention has provided a clear change and improvement in the child's sociocommunicative abilities.

CHILDREN WITH ASD AND PEER INTERACTIONS

For children with ASD, engaging with peers frequently presents challenges. Often, they have difficulty connecting with others because they lack the ability to attach meaning to feelings and social relationships. In addition, they typically lack the skills needed to be effective

interactive partners.[22] Particularly challenging to children with ASD is the ability to appreciate the perspectives and intentions of others.[23–28] These difficulties prevent many children with ASD from experiencing shared meaning and understanding during interactions with peers. Wetherby and Prizant[29] propose that the language difficulties characteristic of ASD are a result of decreased social and emotional development. This idea, coupled with the increased communicative interactions found in preschool children with ASD after peer-mediated intervention,[30] support the use of peers in facilitating increased language function for children with ASD. How to best facilitate these interactions has been the focus of many model programs.

Building relationships is often compromised in children with ASD due to their difficulty making and sustaining connections that share meaning with their peers. Yet establishing relationships is often described as a priority and desired outcome for many parents of children with ASD.[31] What must be considered is a child's ability to nurture relationships through reciprocal interactions with a peer. Reciprocal interactions are built through competency in social skills, communication, and play. Thus, peer intervention programs have been designed and implemented to support the co-construction of a social interaction where an adult guides a child with ASD and a typically developing peer to play and work as partners. Several models of peer intervention have been described in the literature that share components in their design while differing in their implementation strategies.

MODELS OF PEER INTERVENTION

Peer intervention models have been effective at supporting successful engagement of children with ASD in a range of settings.[1,2,4,5,12,32–34] These model programs demonstrate success in increasing the duration and quality of interactions between children with ASD and their typical peers. A valuable approach to understanding each program is to compare their respective components and implementation. Four programs will be discussed comparing (1) the environments in which intervention occurs, (2) the role of typical peers in interactions and how the typical peer acquires the skills to interact, and (3) the role of the adult both before and during the interactions. The programs discussed include Integrated Play Groups (IPG)[19,20,35]; Learning Experiences: An Alternative Program (LEAP)[5,32]; Stay, Play, and Talk[2,3]; and Floor Time Play Dates.[4]

Environment

The environment of a program encompasses a set of features that include the program's physical location, the activities that children participate in, the objects/toys used, the program's schedule, and the people participating in the activities. The IPG program[19,20] is delivered in a variety of environments that include integrated and inclusive classrooms, after-school programs, child-care classrooms, neighborhood programs, and homes, to name a few. Size of the space is an important consideration. Wolfberg recommends that the space be large enough to house activity centers and allow children to move about freely. She also suggests, however, that the space not be so large that children will roam away from one another. Play sessions are structured maintaining a consistent schedule and routine across all sessions. Each session begins with an opening group and ends with a closing group. Visual supports are used as needed. Sessions focus on developmentally appropriate activities in the following domains: sensory, exploratory, constructive, and sociodramatic.

The description of the most current LEAP program situates the program in a naturalistic environment that occurs across settings. Settings can be in school, at home, or in community locations.[32] In school, peer interactions are promoted during board games, art, science, cooking snack, table time, sociodramatic play, book reading, computer, and gross motor activities.[5,32] It is a priority that all programs be designed to be comprehensive, intensive, practical, and effective.[5]

The environment for Floor Time Play Dates[4] is the child's home. Families are encouraged to arrange play dates for their children once their child with ASD is able to open and close at least 10 circles of communication.

A circle of communication is a critical component of Floor Time intervention involving an initiation of an interaction and a response to the initiation, either verbally or nonverbally. During play dates the child with ASD and his or her play partner play with toys in the environment. Initially, one play date a week is arranged, but as the child with ASD becomes more accustomed to the play date the number is steadily increased to four per week.

Stay, Play, and Talk uses the classroom as the environment for its peer intervention. Intervention occurs during activities such as doll play, sociodramatic play, block play, and table play, which includes puzzles and games. Peer intervention also occurs during snack time and more structured activities such as art, gross motor activities, and weekly theme-based activities.[1–3,36,37]

Role of the Typical Peer

Across all peer intervention programs, typical peers play a critical role in the interaction process. Although research has documented that just the presence of a typical peer is not sufficient to generate social communicative interactions with children with ASD, it is clear that with direction, typical peers' play can be key in engaging children with ASD in the rich interactions that are hallmarks of relationship-building between children.[14,38–40] There are many commonalities among the programs. A child is selected to serve as a typical peer not merely because she or he can be a partner but also because she or he is a model of all aspects of behavior including communication, play, and social strategies. Each of the peer intervention models draws upon these qualities to enhance the social communication capabilities of children with ASD. Within the framework of these models the typical peer must develop a skill set that will allow her or him to understand what strategies need to be implemented in the interactive process. To support the typical peer in this process, an adult should be available to observe interactions and to provide guidance and mediation for the typical peer, as necessary. They do this by interpreting the play and communication of the child with ASD to assist the typical peer in initiating and responding appropriately.

In the IPG model the typical peer is known as the "expert player" while the child with ASD is the "novice player." Expert players can be familiar peers or siblings. A playgroup is typically comprised of more expert players than novice players. Three expert players to two novice players is a recommended ratio.[19] To qualify as an expert player, the typical peer must be socially competent, demonstrating sensitivity and responsiveness to others in a social context and an ability to maintain positive contact.[41] Socially competent peers are effective when engaged in social interactions that are developmentally appropriate. The expert player provides a model for social interaction patterns, communication skills, and ways to play for the child with ASD. He or she also learns to understand the communication styles of the novice player and respond accordingly. The adult then guides and develops strategies with the expert player on approaches to engage the novice player in social, play, and communicative interactions.[19,20]

Peers perform a similar role in the LEAP program as in IPG. They serve as models and partners in their communication, play, and social relationships. They accomplish this through the application of learned strategies embedded across a naturalistic setting. The typical peers take turns with the child with ASD and use and model communicative initiations, responses, and requests. The typical peer uses attention-getting devices to establish joint attention. The typical peers share as they interact, which provides opportunities for the children with ASD to participate and a model for sharing the behaviors. The typical peer provides support for the child with ASD by assisting him or her through organizing their play, offering suggestions, and exchanging ideas about what they are doing. To maintain the relationship the typical peer provides praise and encouragement during the interactions.

Peers function as playmates during play dates in the Floor Time model. The expectations are that the peer enters into play with the child with ASD, maintains joint attention, and stays with the play theme for as long as possible, extending the interaction through the opening

and closing of a series of circles of communication. The peer must be attentive to the adult who will help him or her understand the means by which the child with ASD plays and communicates. Once the child has participated in numerous play dates, she or he comes to understand the verbal and nonverbal communication the child with ASD uses. The peer learns to respond without the need of adult interpretation. It is expected that the peer play jointly with the child with ASD, maintaining a shared play focus and attending as much as possible to the child with ASD. The goal is for the play partners to develop an awareness of each other's feelings as they play and work through any differences they might have.[4]

The peers who participate in the Stay-Play-Talk program are expected to implement the peer strategies they learned during training sessions. Incorporated into the general strategies of Stay, Play, and Talk described previously, typical peers are expected to use what are termed "language facilitation strategies" that occur naturally in the course of communication.[3] Strategies used in peer intervention must be valid from an ecobehavioral perspective, that is, "analyses of interactions in typical ecologies (that) seek to reveal behaviors that are most effective in maximizing communicative functioning."[3] Three strategies are identified as meeting this criterion and thus are the ones typical peers are expected to use. First, typical peers are expected to establish joint attention (e.g., through eye contact). Second, they learn to comment on ongoing activities (e.g., *The ball's rolling.*). Finally, they identify the verbal and nonverbal communication attempts by the child with ASD and subsequent acknowledgment and response to that communication (e.g., typical peer: *Josh, let's crash* (moves his scooter into the wall). Child with ASD: (moves his scooter into the wall as well and then tries to back up). Typical peer: *Josh, I think you gotta let the rear [of the scooter] down.*)

The Adult Role in Peer Interactions
The adult performs a pivotal role in supporting interactions between the child with ASD and his or her typical peer across all peer intervention programs. It is the adult who creates the opportunities for engagement through designing interesting, appealing environments that attract all children. These environments incorporate self-leveling activities so that all children can participate. Self-leveling activities permit children to access materials at their individual levels of play. The value of these types of materials is that they are carefully selected for their potential to support advancement of play skills. These materials also allow children to engage in play with peers and become more competent play partners. The adult uses scaffolding strategies to assist children in increasing their potential to participate. The advantage of using self-leveling materials is that they are also of high interest to the typical peers, which will attract them to engage in play and remain as play partners with the children with ASD.

The adult must be available to scaffold the interaction between partners by guiding both the child with ASD and the typical peer to ensure that a joint focus is established and maintained. The extent and degree to which the adult participates in the interactions is determined by the children's needs. Adult participation evolves as children become more capable partners and may vary given the nature and complexity of the play. The goal for the adult is to be as nonintrusive as possible to sustain natural interactions.

During IPG, the adult's role begins with observation and assessment of the novice child's needs.[19,20] To understand the child's needs the adult must observe three skill areas: symbolic and social dimensions of play, communicative functions and means, and play preferences. An important element of the assessment is its ongoing nature. Observation is continuous across all play sessions so that the adult can monitor progress, adjust goals as play changes, and understand what scaffolding is needed. Each playgroup has an adult who supports guided participation. Wolfberg[20] highlights four key practices that comprise guided participation: monitoring play initiations, scaffolding play, social-communication guidance, and play guidance. To monitor play the guide must recognize, interpret, and respond to the novice child's play. Scaffolding play involves building from the child's current play level and advancing play to the next level. Guidance in social

communication entails promoting the use of verbal and nonverbal communication in play. Finally, play guidance aids children in raising their play abilities while engaged in actual play activities.[20] Adults employ three different levels of support for children: modeled and directed play, verbal guidance, and supervision with no interaction. As is obvious from their labels, the guidance moves from a high degree of involvement to little involvement, if any.

The adult's role in the LEAP program is to support peer-mediated intervention by using naturalistic teaching strategies that capitalize on the classroom environment specifically designed to facilitate peer connections. These strategies include: using novel materials; participating in play; inviting children to make choices; using incidental teaching strategies; making comments and asking questions during play; requiring expansion of communication; and inviting interactions with peers.[32] Using novel materials entails incorporating items of interest into the play which may be particularly enticing for the children. To participate in the play, the teacher actually enters into the play activity as a play partner. The teacher invites children to make choices about play or materials through asking questions, making comments, or using nonverbal gestures. Incidental strategies involve manipulating the play environment in such a way that a need for communication is created. Objects may be placed out of reach or essential materials may not be available, requiring children to communicate to obtain them. As children's interest is sparked, teachers facilitate reciprocal communication. The teacher elicits expansion of talk during play by making comments or asking questions that evoke reasons to communicate. Interactions with peers are facilitated through supporting and prompting children with ASD to attend to and communicate with peers. Peers in turn are taught strategies and prompted to use them when communicating and interacting with the child with ASD during play. The teacher also monitors the child's progress as she or he is engaged in the interactive process.[32]

The adult in the Floor Time model also takes on the role of facilitator. By following the child's lead, the adult identifies opportunities to focus the play partners on shared interests in play, thereby maintaining attention for as long as possible while they are engaged with each other. If necessary, the adult uses simple words to interpret play behaviors. The adult's role is also to ensure that the children remain centered on the play theme and to facilitate conflict resolution. The adult helps the children share their symbolic ideas and develop an awareness of their play partner's feelings.[4]

The role of the adult in the Stay, Play, and Talk model has been described in great detail.[1,37] The adult provides training to the typical peer in the skills needed to implement the model. The adult also monitors peer implementation of the process and provides prompts during play, when needed. The training consists of two phases, a pretraining sensitization phase and the training of specific peer strategies. During the first phase, the typical peer is sensitized to the range of means that the child with a disability might use to communicate. The typical peer must be able to recognize communication when he or she encounters it. This component of the training begins with a conversation with the peers about the manner in which children may communicate. This is followed by a short video of an example of a child's classroom communication. More discussion ensues relating to the communication that was observed in the video. If video capabilities are not available, the same process can be achieved through adult role play.

The training itself involves two training sessions of 15 to 20 minutes. The training targets the skills of Stay, Play, and Talk. The first strategy is Stay. During this phase the adult teaches the typical peer to stay close to the child with ASD, say her or his name, and establish joint attention. During the Stay and Play phase of the training, the typical peer is taught to incorporate Play by either entering into the play that the child with ASD is engaged in, bringing a toy to the play, or suggesting that the child enter into an existing play activity. The second session adds the strategy Talk to Stay and Play. The peer is taught to talk to the child about the materials and/or activities that are elements of the play. For each of these strategies the adult provides a model and the peer practices it and receives reinforcement when the peer is

executing it appropriately.[1,37] Once training is complete, the peers are ready to implement the strategies in the classroom. It is at that time that the adult monitors the peer's use of the strategies and uses verbal or visual prompts and reinforcement during the course of the day to ensure their implementation. The peers receive positive reinforcement when they use the strategies appropriately.[37] The adult also prompts the child with ASD during the play to interact with the typical peer. The amount of prompting is monitored to reduce intrusiveness[1,36,37] and is decreased as the peer strategies used become more consistent.

Within the Stay, Play, Talk model the adult also can provide dyadic training.[1,37] During dyadic training, the child with the disability is trained to Stay and Play with her or his typical peer. This training takes place across the course of the day. The adult monitors the dyads not only to determine ongoing use of the interaction strategies, but also to determine changes in the participation and communication of the child with the disability.

PEER PLAY INTERVENTION PROJECT

It is clear from the previous discussions that development of play abilities and social communication are crucial skills in the life of young children, yet children with ASD demonstrate marked challenges in these areas. Being able to "play" and communicate in social contexts affords children the opportunity to function symbolically; it supports language development; and it is critical in the development of more complex social interactions. The Peer Play Intervention Project[6–8] targets the development of social and play partnerships through play intervention with children with ASD and peers without disabilities. As with the other programs previously described, Peer Play is best portrayed through its use of environment, adult roles, peer roles, and program goals.

Environment

In contrast to previous research, which has focused on peer interactions in the classroom or during structured group activities, Peer Play supports social interaction in the home environment where children with ASD are familiar with their toys and routines. Many studies focusing on peer-mediated intervention or the interaction between children with ASD and their peers take place in a school or therapy setting.[14,39,42–50] School is a convenient setting because of access to many children, with and without ASD. However, the school environment may be less comfortable for a child with ASD than a more familiar setting like the home. Playing with peers at home or in a child's neighborhood may have greater potential for facilitating the typical connections and relationships used to establish potential friendships. Peer Play is performed in the home setting, assuming that verbal and nonverbal attempts to regulate behavior, engage in social interaction routines, and/or establish joint attention with a peer and/or adult by children with ASD are more likely to occur in a familiar, predictable environment.

The goal of Peer Play intervention is to use familiar toys or materials within familiar routines in familiar settings. The first phase of the program determines the nature of each of these aspects of the program through a preintervention interview process. The *Caregiver Questionnaire*[51] is mailed to and completed by each family prior the intervention. The purpose of this questionnaire is to ascertain the nature of the child's communication, play skills, and interaction patterns with others. The *MacArthur Communicative Development Inventory*[52] is also sent and completed by the families to determine their child's basic communicative levels.

After the questionnaires are received and reviewed, project staff interview the families. The interviewer uses *The Family Inventory of Play Behaviors.*[8] The purpose of this interview is to provide a forum in which the family members discuss their child's play preferences with respect to toys and play routines. The questionnaire uses an ethnographic interview format allowing the family to engage in and expand on a discussion about their child's play preferences and interactive styles. The questionnaire begins with addressing the child's play experiences by asking how the child typically plays and requesting examples of the

child's preferred play. Once the family describes the child's play style, they are asked to talk about:

1. whom their child plays with and how they play together;
2. the kinds of things or materials their child plays with and how he or she uses them;
3. what their child does when she or he plays;
4. how long their child typically plays;
5. what the family thinks their child is feeling when she or he plays;
6. what makes their child excited or happy when playing;
7. what bothers their child when someone plays with him or her.

The information from all these instruments is summarized and triangulated to create a profile of the child's play and communication preferences. The adult interventionist uses this information to develop his or her interactions during the play sessions.

The play environment comprises familiar toys and materials that the child with ASD accesses with ease, providing a scaffold for interactions and routines around the use of the toys. Incorporating familiar toys and routines in the intervention empowers the child with ASD to enter into play with a peer.

Prior to intervention, three baseline sessions occur to establish familiarity and comfort among the children, for typical peers to learn about the toys in the home of the child with ASD, and to observe and analyze the peers' interaction without adult support. Ten 30-minute intervention sessions follow with one session at the midpoint (after intervention session 5) where intervention is withdrawn to assess engagement and communicative behaviors without adult support. It is expected, based on the data gathered at this midpoint, that adult scaffolded support will decrease over the remaining five intervention sessions as the children become more able to establish and maintain interactions independent of the adult. A follow-up session occurs once the 10 intervention sessions end, again to assess engagement and communication without adult support. Where possible, the children are seen again at 3 and 6 months post intervention.

Role of the Adult

Peer Play is comparable to the previously discussed programs in that the adult provides models and cues to support the interaction between the child with ASD and the typical peer partner. In contrast to these programs, however, the Peer Play uses interventionists to cue both the child with ASD and the typical peer. Thus, both children have the same opportunities to respond to and learn from the adult cues in interactive play.

An interventionist cueing system was developed to prompt the children during their play and social communication based on three categories of communicative function: (1) behavior regulation, (2) social interaction, or (3) joint attention necessary for children to engage in reciprocal interactions.[18,53–56] Behavior regulation cues target communications that influence the partner's behavior, causing the partner to do something.[54] Those cues that encourage social interaction during play are used to assist one peer in both drawing and sustaining attention to him/herself during play.[54] Joint attention cues guide children to direct each other's attention to the action that is going on or to some object of interest in the environment.[54] This is a critical skill for ensuring intervention gains for children with ASD.[57]

The cues are blended into the play to sustain a naturalistic interaction and demonstrate the reciprocity that occurs between partners as they are implemented. The adult interventionist watches the children's interactions closely and capitalizes on opportunities to facilitate engagement. Behavior regulation cues are used to guide the children in their ability to direct their peers' actions. The cues include:

- Interventionist lets the child know it's his or her turn (e.g., *Your turn, ___.*)
- Interventionist makes a suggestion about what can be done with objects or toys in a particular play event (e.g., *You can put the block on top of the tower.*)
- Interventionist helps to negotiate an object of play or an action during play (e.g., *___ wants to play and you want to play ___. What should you do?*)

- Interventionist offers a way to access a play partner by suggesting the child ask for help or offer help to the other child. (e.g., *You can ask ___ for help. You can tell ___ you can help him. ___, tell ___ you need help. ___, tell ___ you can help him. Maybe ___ can help you.*)
- Interventionist reinforces an appropriate behavior of the child (e.g., *I like the way you helped your friend.*)
- Interventionist responds to a child's request for an object or action (e.g., *You can bounce the ball next.*)
- Interventionist responds to a child's protest (e.g., *I know you want the ball, but it is ___'s turn.*)
- Interventionist redirects child's bid to a peer (e.g., *Don't tell me. Tell your friend.*)
- Interventionist tells child what to say (e.g., *___, say, ___; Tell him again, he didn't hear you, say ___.*)

Interventionists implement the following cues to engage children in social interaction. These cues provide support for the children to attend to each other during their play routines:

- Interventionist invites the partner to join the play, if one of the play partners is at a distance (e.g., *___, come play baseball with us.*)
- Interventionist offers or asks for an idea or suggestion to initiate a particular play event. (e.g., *So, what game should we play today? I have an idea, we could play pirate ship.*)
- Interventionist praises or makes positive comments about the play between the play partners. (e.g., *I like the way you are both working together to make the racetrack.*)
- Interventionist makes a suggestion to one child to engage the other child to play. (e.g., *___, maybe you can ask ___ to play a game with you.*)

Interventionists use joint attention cues to focus the children's attention on an event, an activity, or an object that is part of their play. The following cues are used:

- Interventionist talks about or comments on what is going on (an event or activity) as it is happening. (e.g., *Look at the silly picture ___ is drawing.*)

- Interventionist responds to a child's comments about what is going on (an event or activity) as it is happening. (e.g., *You are really moving fast on the scooter.*)
- Interventionist talks about or comments on an object of play (e.g., *I think we need to change the tire on the truck.*)
- Interventionist responds to a child's comments about an object of play (e.g., *You're right, the truck is too big to go through the tunnel. I wonder what we should do next.*)
- Interventionist asks a question during a play event or activity (e.g., *Where is the truck going to deliver the lumber?*)
- Interventionist responds to a child's question during a play event or activity. (e.g., *I'm not sure how fast the scooter can go. Maybe you can ask ___.*)

The degree to which the interventionist uses these cues is based on several indicators. The primary indicator is the nature of the interaction between the children during their play. If the interventionist notes that the children are not making bids to engage each other, then the interventionist uses the appropriate cues to stimulate the interaction. Conversely, if the interventionist notes that the children are independently using bids to engage each other then she or he refrains from entering into the play. Overall, the interventionist works to facilitate cooperative interactive play, coaching the children to sustain their interactions around a topic and moving them forward to be creative.

Peer Partners

The focus of the Peer Play Intervention is on peer partnership so careful consideration is given to match the peer with ASD and the peer without disabilities. Children with ASD who have participated in the Peer Play project range in age from 4 to 6 years. They were previously diagnosed with pervasive development disorder/autism (PDD/Autism) or pervasive developmental disorders/not otherwise specified (PDD/NOS) as described in the DSM-IV.[58] To gain maximum benefit from the Peer Play Intervention children with ASD are required to demonstrate, at a minimum,

an ability to respond to bids for regulating behavior, engaging in social routines, and establishing joint attention by another.[29]

The peer partners without disabilities are of similar age as those with ASD, between 4 to 6 years. They have had some familiarity with the child with ASD and are selected based on an interest they may have shown toward the child with ASD or an interest the child with ASD may have shown toward the peer. Also considered is the parent's comfort with a particular peer's ability to initiate and sustain interaction with a child who may have less flexible and responsive play. This increased the likelihood that the typical peer would be someone with whom the child with ASD would be motivated to interact and with whom a relationship could be established. Further qualifications for the typical peer include language abilities that were at least commensurate with his/her chronological age based on the interventionist's observation and family or teacher report. Because of the need for continuity of play dates it was important that the peer be available to play one time per week for up to 15 weeks.

As the peer partners are engaged in the play interactions they are guided to use interactive bids via the interventionist's cues. An interactive bid is an attempt by either partner at a social interaction routine, behavior regulation, and/or joint attention with a peer and/or adult. Bids can be verbal and/or nonverbal, including unconventional attempts. The bids are categorized, as the interventionist cues, into behavior regulation, social interaction, or joint attention, as follows.

Behavior Regulation

- Requesting objects
- Requesting actions
- Protesting

Social Interaction

- Directing another to begin or continue a game-like activity or routine (in-play, keeping the turn); occurs within the same activity (e.g., *It's your turn. It's my turn.*)
- Inviting another to play

- Suggesting an activity to initiate a particular play event or activity

Joint Attention

- Directing another's attention to an object, action, or event
- Commenting on an activity and/or object of play
- Asking questions of another during an event or activity

The children are not only prompted through interventionist cues to use bids but also to use behavior regulation, social interaction, and joint attention responses. As with bids, responses could be verbal and/or nonverbal and may be unconventional. Responses include:

Behavior Regulation

- Responding to a bid/cue to an object of play
- Responding to a bid/cue to an action within play
- Responding to a protest

Social Interaction

- Responding to a game-like activity or routine
- Responding to an invitation to play
- Responding to a suggestion of an activity

Joint Attention

- Responding to another's directed attention to an object, action, or event
- Responding to commenting on an activity or object of play
- Responding to a question during an event or activity

Table 1 provides an example of utterances produced during peer play with the function of the bids and responses coded as behavior regulation, social interaction, or joint attention.

Program Goals

Peer Play Intervention has three major goals. The first goal is to enhance the engagement that occurs between the child with ASD and

Table 1   Bids and Responses Coded for Utterances Produced during Peer Play

Utterance	Bid	Response
TP: Why can't we race Paul?	X-joint attention	
CA: Yeah, he's so easy to beat.		X-joint attention
CA: Let's get back to scooter riding	X-social interaction	
TP: No, we're not—we're [doing] tricks.		X-social interaction
CA: (points at a car TP is holding)	X-behavior regulation	
I wanna do that one.	(nonverbal + verbal)	
TP: Know what, I'm gonna be these.		X-behavior regulation
You can choose three cars.		
I'm gonna be these three.		

TP, typical peer; CA, child with autism.

his/her typical peer during play interactions. Engagement is the time children focused on the same action or object of play. It begins with an attempt at bids for social interaction, behavior regulation, and/or joint attention and ends with an attempt to which there is no response or with a response that is not followed by another attempt.

A second goal of Peer Play Intervention is to nurture relationships between the child with ASD and the typical peer that extends beyond the intervention. A child who both demonstrates interest in the child with ASD and has the play skills to sustain interactions is identified as the peer partner. In other programs, peer partners are often selected for the child with ASD by parents or teachers because the typical peer and the child with ASD are in the same classroom or program,[12,22,50] but these choices are not based on qualities that define a budding or potential relationship. For one dyad in Peer Play Intervention, the two children became good friends and spent time with each other each week even 6 months after intervention. For another dyad, the children and mothers became friends and were disappointed when one of the families moved away.

A final goal of Peer Play Intervention is to empower families with strategies that they can use during play dates not only with the trained peer but with other peers as well. Parents are an integral part of the project. Not only do they provide contextual information that informs the intervention but they also come to understand the nature of the cueing strategies used by the interventionists. Awareness of the cueing system supports them in facilitating the continued interactions between their child and his or her peers and expanding play and communication opportunities with new peers. Parents of children for two dyads who participated in Peer Play Intervention reported improved peer connections beyond those with the trained typical peer.

CONCLUSIONS AND IMPLICATIONS

It is clear that children with ASD require direct support to facilitate their social interaction, communication, and play. Typical peers have been used to support the social competence of children with ASD. Strategies that involve peer models and reinforcement of target social behaviors have been particularly successful in increasing engagement and sustaining interaction during play.

Practitioners have a responsibility for providing opportunities for children with ASD to establish positive peer relationships, as this is a valued life outcome reported by families[31] and a recommendation by the National Research Council[59] to ensure children with ASD receive best practice intervention. Including social interaction goals in a child's individualized educational plan is critical to the child's intervention program.

The peer intervention models reviewed in this article highlight the key components that characterize successful programs. The environment, the role of the typical peer and the child

with ASD, and the role of the adult in supporting the social interactions are just some of the components that must be considered when establishing a treatment program. Practitioners might consider a framework for facilitating bids and responses among children with ASD and their typical peers that begins with establishing basic communicative functions like behavior regulation, social interaction, and joint attention and move toward sustained interactions in the context of cooperative play. Further, creating opportunities for establishing and maintaining friendships should also be a consideration for intervention. Research should continue to explore the role of peers and children with ASD in developing social connections at home, school, and in the community.

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