

Play-Based Interventions for Children With PDD

Most children are able to successfully develop and use social skills in the context of interactions with peers and significant adults. Moreover, the ability to interact successfully with peers is crucial in establishing and maintaining viable social relationships (Liiva & Cleave, 2005). For children with disabilities, like pervasive development disorder (PDD), development of these skills is difficult (Brown & Whiten, 2000; Kopp, Baker, & Brown, 1992). Children with PDD often demonstrate deficits in foundational social-communicative behaviors such as joint attention (Mundy, Sullivan, & Mastergeorge, 2009; Schertz & Odom, 2004) and imitation (Ingersoll & Gergans, 2007), and they frequently lack the motivation to engage in social reciprocity (Lord, Cook, Leventhal, & Amaral, 2000).

Several studies report strong correlations between joint attention and later language development (Charman, Drew, Baird, & Baird, 2003; Dawson et al., 2004; Thrum, Lord, Lee, & Newschaffer, 2007; Toth, Munson, Meltzoff, & Dawson, 2006). Joint attention is defined here as coordinating one's attention toward a shared object or person. Imitation has also been linked to language growth (Rogers, Hepburn, Stackhouse, & Wehner, 2003; Thrum et al., 2007), along

with symbolic play or pretend play (Paul, Chawarska, Cicchetti, & Volkmar, 2008; Thrum et al., 2007) and frequency of communicative requests (Wetherby, Watt, Morgan, & Shumway, 2007). Moreover, Paul and colleagues (2008) found that children with better language outcomes initiated consistent bids for joint attention and had limited repetitive behaviors than children with PDD at preschool age. Thus, it appears that there are several foundational behaviors that are necessary for later complex language acquisition and growth. Children who fail to demonstrate the following skills may be at a greater risk of chronic language delay: limited receptive language, lack of imitation, lack of symbolic play, limited requests, stereotypic behaviors, and poor joint attention (Paul & Roth, 2011).

Because of such delays, social skill development is a priority for caregivers working with young children with PDD, particularly as they consider interventions that have the strongest potential for success. Social skill interventions often have produced considerable improvements (Mahoney & Perales, 2003; Odom, McConnell, & Chandler, 1994; Sigman & Ruskin,

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1999), and are frequently implemented within the context of play activities. However, there exist wide variations in clinical features of PDD in the social and communicative areas. While empirically based interventions continue to be developed and tested, researchers (Lord et al., 2005) suggest that interventions be based on a profile of strengths and weakness within these developmental areas.

One way to uncover these areas of strengths and weaknesses is within the context of play. Play offers a way of engaging children because the goals of play are often flexible, self-imposed, and can change over the course of time. However, social play can be described as loosely bounded by specific rules (Fromberg, 2002). In play with others, children are required to act in socially appropriate ways to extend and enhance the play interaction. Extending play interaction requires a set of socially communicative signs that signal a willingness to interact with another, along with the necessary skills to sustain the interaction. However, because children with PDD often demonstrate less global and detailed play skills, it is difficult to uncover foundational skills that can be built upon to enhance larger repertoires of behavior. For example, children with PDD may not initiate contact with others or demonstrate functional play with toys such as using a toy brush to brush a doll's hair or pretend to drink from a cup. Such complex behaviors are often profoundly absent in the play schema of children with PDD.

Thus, simple guidelines that caregivers can follow to uncover the prerequisite skills for later complex

play behavior are needed. In this article, we describe the three specific prerequisite skills that are critical to the development of complex play behavior, and then discuss interventions that caregivers can easily implement to target each skill.

Prerequisite Skills

While there exists a repertoire of necessary skills to successfully navigate play interactions, we focus on three specific skills that seem to be the foundation for later complex play behaviors. The skills to be discussed are social referencing, reciprocity, and initiation/responding. Table 1 provides specific behaviors across each skill that teachers can look for while observing in a play context.

Social Referencing

Social referencing describes how a child receives nonverbal cues from others and interprets them, to act in certain ways. It is one of the earliest indicators of pragmatic language development and includes such behaviors as eye gaze, facial expressions, and tone of voice. It is a special kind of joint attention in that the function of social referencing is to seek out the emotional content of another person's feeling toward an object or person. The information can then be used to motivate or guide the child's behavior (Warreyn, Roeyers, & de Groote, 2005). Social referencing is observed in typically developing infants and toddlers in the last months of the 1st year of life. It is a crucial milestone in the development of the child as it allows the child to convey and receive information about desired objects or people.

Table 1
Behaviors Across Play Skills

Play skill	Behavior
Social referencing	<ul style="list-style-type: none"> Does the child visually track a moving object? Does the child direct and sustain gaze toward an object? Does the child direct and sustain gaze toward a person? Does the child follow the adult's lead in looking at a mutual object? Does the child shift gaze from object to object? Does the child shift gaze from object to person or person to object?
Reciprocity	<ul style="list-style-type: none"> Given an adult model, does the child imitate a sustained sound? Given an adult model, does the child imitate a word or phrase? Does the child reciprocate a greeting? Does the child respond to a question using a gesture? Does the child respond to questions with a verbalization? Does the child respond to a communicative turn with a familiar adult? Does the child respond to a communicative turn with an unfamiliar adult? Can the child take three communicative turns in a play episode?
Responding	<ul style="list-style-type: none"> Does the child respond to a simple nonverbal direction? Does the child respond to a simple one-step direction? Does the child respond to a simple two-step direction? Does the child gesture to respond to a greeting?
Initiation	<ul style="list-style-type: none"> Does the child vocalize a call to gain a listener's attention? Does the child call a listener by name to gain the person's attention? After gaining a person's attention, does the child use a gesture to begin an interaction? After gaining a person's attention, does the child use a gesture and a vocalization to begin an interaction? After gaining a person's attention, does the child verbalize to begin an interaction?

Eye gaze, a skill that is acquired by the age of 1 month, is the vehicle for social referencing, and mutual eye gaze or eye contact develops around the same time. It occurs when the caregiver and child look at one another. Gaze coupling occurs when the caregiver and child look at the same object and this begins the developmental sequence of joint attention so crucial for later language acquisition. In fact, research has shown that in preschool-age children with PDD, joint attention is predictive of both current language ability and future gains in expressive language skills (Charman et al., 2003; Sigman & Ruskin, 1999).

Reciprocity

Reciprocity, or turn taking, can be thought of as a process that involves the return of behavior or relationship qualities received from another (Russell, Pettit, & Mize, 1998) and emerges as early as 3 months of age in typically developing infants. Soon after infants learn to look at adults, they begin to imitate their facial expressions and vocalizations. Caregivers respond to this imitation by increasing their facial postures and vocalizations and create a cycle of interaction predicated on turn taking. Children who appropriately develop reciprocity are aware of the

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emotional and interpersonal cues of others, appropriately interpret those cues, respond appropriately to what he or she interprets, and are motivated to engage in social interactions with others (Constantino et al., 2003). In addition, teaching children turn-taking strategies improves the quality of interactions that children with PDD have with their peers (Stanton-Chapman & Snell, 2011) and lays the foundation for more complex conversational exchanges.

Initiation/Responding

Initiation is the intentional act of one communicative partner with another to begin a conversation or, essentially, the start of a communication exchange. Before children begin to use intentional communicative bids, they often engage in vocal play with their caregivers. For the infant, this vocal play evolves into an initial bid to gain the attention of a caregiver. By the time infants are 9 months of age, they know how to initiate a communicative bid by using gestures, shifting their eyes, and pointing their fingers to make a request. Initiation of verbal requests comes later when the child acquires his or her first words between 12 and 18 months of age. Children with PDD do not naturally acquire the ability to initiate and therefore, must be directly taught these skills (Adamson & Bakeman, 1991). Without the initiation of interaction, the child will be limited in the amount of feedback and communicative practice he or she will need to become successful in social situations.

Although there are a number of ways to respond to initiations by

others, we focus on the earliest forms: following a direction and initiating a greeting. The most common type of responding is to follow a simple directive. The recipient of the message is expected to interpret the message and follow the directions. The act of completing the direction can be considered a responding move. Greetings are familiar to most young children and can be delivered in nonverbal form.

Interventions to Develop Prerequisite Skills for Complex Play

Given the importance of facilitating the development of play for young children with PDD, it is important to identify target play activities or routines during which intervention can be successfully implemented. The following sections will outline intervention strategies teachers can use to teach the prerequisite skills of social referencing, reciprocity, and initiation/responding within the context of selected play activities. Vignettes will also be included to demonstrate practical application. Table 2 provides some specific interventions for further reference.

Attunement and Social Play

Attunement play is characterized by a matching of affect (Mori, 2001) between the caregiver and child which helps to build social referencing. Social play naturally evolves from attunement play and involves a give and take with others. Attunement and social play consists of a rhythmic kind of interaction initiated by the caregiver and

Table 2
Strategies for Implementing Interventions

Play skill	Strategy
Social referencing	<ul style="list-style-type: none"> • Provide items of high interest to the child • Point to the items of interest • Create surprise of unexpected situations with facial expressions and tone of voice • Encourage the child with ASD to direct and shift eye gaze between objects in people
Reciprocity	<ul style="list-style-type: none"> • Engage child with item of high interest • Encourage turn taking through simple statement of "My turn" and "Your turn" • Work on nonverbal turn taking in play. Demonstrate the turn taking skill with another competent partner
Responding	<ul style="list-style-type: none"> • Create opportunities for the child to respond to directions and/or requests within everyday routines • Create a two-step direction represented by pictures (i.e., put the toy truck in the basket and bring the doll to me). Provide a reinforcer for correct completion
Initiation	<ul style="list-style-type: none"> • Model appropriate greeting using gestures, signs, words, and/or short phrases • Pair a picture and peer/adult name to help with memory and to facilitate initiation • Praise nonverbal attempts to initiate • Demonstrate and exaggerate the initiative acts for the child

Note: ASD = autism spectrum disorder.

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directed to the young child. There are many simple play behaviors that can encourage this connection. For example, the simple game of “peek-a-boo” sets up an anticipatory state of surprise and joy when the caregiver hides and then reappears with a smile. In attunement and social play, the focus is on seeking and maintaining social referencing through the use of joint attention with the child. The following illustration can help to clarify this interaction:

Charlie stands on his caregivers' legs as she sits in a chair holding him upright. The caregiver counts slowly one, two, THREE lifting Charlie up into the air and smiling excitedly. She slowly lowers him back down and then begins to count

again pausing after each number to raise Charlie's level of anticipation. Up he goes again on the count of three and Charlie bends his knees ready to jump up. Charlie lets out a giggle as he is lifted up and the caregiver responds in kind. This playful rhythmic pattern of interaction while maintaining joint attention establishes a mutual sharing of emotion.

To build reciprocity, the caregiver can begin by playing simple turn-taking games. For example, he or she can select a toy car, ball, or other item that the child finds interesting. The caregiver models an action using the object while sitting next to the child. Using hand-over-hand assistance with the child can help him to perform the

action as the caregiver gradually fades the prompt to a verbal direction such as, “You roll it,” until the child can spontaneously produce the action.

Charlie sits beside his caregiver at a table with a toy ring stacker. The caregiver says, “My turn” and places a ring on the peg. Next, she takes Charlie’s hand, guiding it as they pick up a ring and place it on the peg saying “Your turn.” The caregiver comments excitedly, “You did it . . . good job.” The caregiver takes another turn and then guides Charlie’s hand picking up the next ring and placing it on the stacker. Charlie and his caregiver continue taking turns as she places Charlie’s hand on the next ring and encourages him to put it on the stacker. Charlie places the ring on the stacker and his caregiver reinforces Charlie with a hug. The

caregiver gradually fades the hand-over-hand prompt by just placing Charlie’s hand on the ring and then encourages him to put the ring on the stacker. Charlie places the ring on the stacker and his caregiver praises him again. The game continues until all rings are on the stacker and physical prompts are faded.

Strategies for teaching the child to respond are critical in attunement play as well as interacting in more complex play. Children need to be able to follow directions, take turns, or respond to comments. Even when the child has joint attention, it may be difficult for him or her to process a request and will need the guidance of the caregiver to complete the direction. Use of gestures can help to limit the processing load of the request and help the child to respond to a direction.

Charlie has a keen interest in dolphins often carrying them with him throughout the day. Charlie’s caregiver takes advantage of his interest and creates a game using a stuffed dolphin and some plastic hoops. She places the hoops in a circle and then tells Charlie, “Watch Charlie, I will point to the hoop and the dolphin will jump in.” Using a pointer stick, the caregiver points to the hoop and pretends to make the dolphin jump in the hoop. She retrieves the dolphin and gives it to Charlie saying, “Your turn Charlie, watch.” She points to the hoop and encourages Charlie to put the dolphin in the hoop. Then she points to another hoop. Charlie takes the dolphin and makes it jump into the next ring. The caregiver continues the game while pointing to each hoop.

Initiation of a communicative interaction requires that the child focus on something he or she wants



to talk about and then shift the focus to another person. Children can initiate using a gesture, a vocalization, verbalizations, or a combination of these communicative signs. Therefore, it is appropriate and necessary that children are taught to initiate. Caregivers need to help the child gain the attention of another person by modeling the use of a greeting with a polite form of address and then demonstrate how to initiate an exchange. Frequent trials are necessary to establish this basic but sometimes difficult skill for children with PDD.

Ms. Smith requests the help of her colleague, Ms. Brown, in modeling appropriate greetings for Charlie. Ms. Brown holds a see-through container with several of Charlie's preferred items so that it is

visible to Charlie, but in Ms. Brown's possession. Ms. Smith gets Charlie's attention by saying, "Look at what Ms. Brown has Charlie. Listen: Ms. Brown, may I have a dolphin?" Ms. Brown responds excitedly saying "Yes, you can," and gives a dolphin to Ms. Smith. Ms. Smith turns to Charlie and says, "Ask Ms. Brown for a dolphin," Say, "Ms. Brown may I have a dolphin?" Charlie repeats the question looking at Ms. Brown and the initiation results in a positive response from Ms. Brown.

Pretend Play

Pretend play offers many opportunities for caregivers and children to engage in social referencing, reciprocity, and initiation/responding. The first strategy the caregiver can use to facilitate social referencing is to provide items that are of interest to the children, and therefore, more likely to engage them in the play situation. The caregiver can begin by simply pointing to the item, thereby drawing the child's eyes and attention to that object. The caregiver can also create surprise or unexpected situations (Mastrangelo, 2009), coupled with facial expressions and tone of voice, that are likely to again elicit attention and a response from the child.

Charlie and his caregiver are sitting together in the "grocery store" that has been made available to the children for pretend play. One particular item, the cash register, is of particular interest for Charlie as noted by his caregiver on previous occasions when it was introduced. The caregiver points to the cash register and says, "Look Charlie, here is the cash register,



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let's see what it can do.” Charlie begins to push the buttons, one of which opens the drawer. The caregiver begins to remove the play money one by one, encouraging Charlie to do the same. Hidden underneath the money in one of the slots is a small, toy dinosaur. Charlie picks up the dinosaur and while pointing to the dinosaur the caregiver exclaims with a smile and a surprised look on her face, “Oh my, what is this dinosaur doing in the cash register?”

To facilitate reciprocity, the caregiver can begin with simple contextual support by positioning herself to maximize face-to-face interactions, following the child's lead to enhance engagement, and again identifying objects that are of interest to the child. Often children with PDD will play in isolation, even when peers and/or adults are in the same play area. The caregiver can turn this isolated play into a reciprocal interaction by creating turn-taking exchanges meant to increase the length of attention and engagement. Finally, the caregiver can arrange the environment so as to increase the frequency and type of opportunities for the child to communicate, for example, by giving only a small amount of a desired item or placing desired items out of reach to encourage verbalizations (Leach & LaRocque, 2011).

At the pretend play center, the caregiver has seated herself directly across from Charlie, who is again busily pushing buttons on the cash register, his preferred interest item. The caregiver can follow Charlie's lead by commenting on what he is doing and encouraging him to interact. For example, the caregiver might say, “I have money that needs

to go in the cash register,” while presenting it to Charlie, with the intention of Charlie taking the money and putting it in the cash register. Later, as Charlie is busily lining up play food on the table, the caregiver brings her grocery sack and list of items that she wants to put in the bag. She might say, “I need to get an apple,” to encourage Charlie to respond by getting the apple for her. Finally, noticing that Charlie has now picked up a bag of his own and seems to be looking for items to place in it, she may offer play food items one at a time or out of reach to encourage him to ask for more.

Finally, to facilitate initiation, the caregiver can make use of visual means of communication to encourage the child to request something the child wants, or initiate an interaction with either a peer or adult. Using visual means for communication can be more meaningful and motivating, reminding the child that communication involves other people, and can act as a bridge toward more complicated or symbolic types of communication, such as words (Mastrangelo, 2009). Visuals can be used to support the child in following a direction, and the caregiver may consider using sign language paired with modeling to scaffold a child's initiation of a greeting.

While playing in the manipulatives center, Charlie has discovered one of his favorite items is available, toy cars. He immediately grabs a fire truck. Charlie is also joined in the center by one of his preferred friends, Emily. Seeing the potential for initiating play, the caregiver could encourage Charlie to either bring

the truck to Emily, bring Emily to the truck, or provide Charlie with a picture that he could give to Emily, any of which could signify his interest in wanting to play with her. The caregiver can bring Charlie and Emily together and model using the sign for "Hello," and encourage both Emily and Charlie to reciprocate by also signing and saying, "Hello." Finally, when it is time for Charlie to clean up the toy cars and get his coat on to go outside, the caregiver can pair the verbal directive with visuals, in the form of pictures, that demonstrate placing the cars back in a tub and putting a coat on.

Peer Buddy Interventions

Peer buddy interventions provide opportunities for increasing



social interactions among children with PDD and their typically developing peers, resulting in increased social interactions between children with and without disabilities (English, Goldstein, Shafer, & Kaczmarek, 1997). Peer buddy interventions provide training to typically developing peers to initiate, prompt, and reinforce social interactions with their peer buddy, thereby resulting in improvements in social play behaviors of children with PDD rather than simply having them in close proximity to their typically developing peers (Bass & Mulick, 2007).

Peer buddy interventions also provide multiple opportunities for children with PDD to participate in social referencing, reciprocity, and initiation/responding. For example, to facilitate a peer buddy intervention, the caregiver may prompt the typically developing peer to offer a preferred toy or object that is of interest to a child with PDD (e.g., social referencing), thus increasing the likelihood of a reciprocal play situation that involves turn taking and exchanges (e.g., reciprocity) between the two peers.

Charlie's caregiver prompts Emily to offer Charlie his favorite toy, the fire truck. Charlie takes the fire truck from Emily and the two begin to play by driving the trucks on the carpet. While observing the interactions between Charlie and Emily, Charlie's caregiver may prompt Emily to drive her truck through the tunnel, which is only large enough for one truck at a time, while saying "My turn, next time is your turn Charlie."

Goldstein and Thiemann-Bourque (2012) recommended that peer buddy interventions remain simple and reflect children's

developmental needs. By using simple strategies, children with PDD can learn a variety of initiation and response strategies from their typically developing peers such as initiating play (e.g., “Charlie, let’s play trucks.”) and responding to their peer’s gestures and/or offers (e.g., “Charlie, do you want to play with the fire truck or the dump truck?”). However, placing too many demands on the typically developing peer is likely to be counterproductive. Spreading peer interactions throughout the day and across more than one peer may help to ease the demands and promote generalization across partners, settings, and activities.

“Stay, Play, Talk” is a simple strategy that is designed to facilitate peer interactions between a child with PDD and a typically developing peer buddy (English, Goldstein, Kaczmarek, & Shafer, 1996). Typically developing peers are taught the following three simple steps: (a) Stay with your friend, stay in the same area and observe what he or she does; (b) play with your friend, suggest things to play with or go along with what your friend likes to do; and (c) talk to your friend, talk about what you are doing and talk back to your friend. Tell your friend if you do not understand (Goldstein & Thiemann-Bourque, 2012).

To teach Emily the steps of stay, play, talk, the caregiver first encourages Emily to stay close to Charlie, invite him to play by bringing a toy over, and to move where Charlie moved during free play. For the talk step, Emily was taught to talk about the toys they were playing with or actions they were doing, as well as responding to the communication attempts by Charlie. During free play, Charlie was playing with the fire truck. Emily joins in playing with Charlie by taking the dump truck and saying to Charlie “Trucks.” When Charlie moves to another area of the classroom, Emily follows.

Final Thoughts

Children with PDD often exhibit deficits in social communication behaviors that adversely impact later language development. The specific interventions presented here target prerequisite language skills necessary for later language success. Using these guidelines and research-based interventions (attunement and social play, pretend play, and peer buddy interactions), teachers can provide opportunities for children with PDD to increase their social communication skills.

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