



Three Evidence-Based Strategies that Support Social Skills and Play Among Young Children with Autism Spectrum Disorders

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Abstract

Research demonstrates young children with autism and other developmental disabilities can benefit from participation in play activities with peers. Play provides opportunities to increase social skills across developmental domains in an integrated manner and provides opportunities to develop a sense of belonging and friendship; these goals are critical for young children with disabilities. However, in order for children with disabilities to benefit from the interactions that occur during play and to continue to progress developmentally in play skills, systematic intervention in social skills is needed. A variety of evidence-based practices provide guidance to teachers. In this article, three strategies are presented to assist early childhood educators. The three research-based strategies include the use of scripts, video modeling, and embedding choice as part of classroom activities. These practices create a context in which play skills can be developed and used in natural environments, thereby facilitating children's engagement in play and improving the likelihood for improved interactions with peers.

Keywords Social skills · Disabilities · Autism spectrum disorders · Play

Introduction

Friendships are an important social experience for all children, enabling them to develop and practice fundamental pro-social skills, such as mutual caring, support, empathy, and sharing (Bauminger and Shulman 2003). Friendship requires specific elements of social competence including the ability to communicate effectively, cooperate, understand and reflect on another's perspective, regulate emotions, and problem solve (Asher et al. 1996). The majority of children acquire the social competence needed for building friendships as they naturally interact with others throughout school, family, and community contexts. However, many children with autism spectrum disorder (ASD) experience challenges in developing the social skills that not only are key to establishing lasting relationships with others (Lord and Jones 2012) but also result in higher quality of life

outcomes (Carter et al. 2010; Stichter and Conroy 2006). Specifically, children with ASD have fewer opportunities to develop the social skills necessary for social competence (Carter et al. 2008). To develop social competence, these students often require multiple opportunities to interact with their typical peers (Guralnick et al. 2007) across a number of settings (McCollum and Ostrosky 2008). Yet, many children with ASD are frequently educated in restrictive, segregated settings (Hughes et al. 2011), and even when they can access typically developing classmates, their interactions are generally limited (Guralnick et al. 2006).

Students with ASD manifest social difficulties in a number of ways and as a core feature of their disorder. For instance, children with ASD frequently have trouble forming and maintaining relationships with peers, understanding subtleties of social communication (e.g., interpreting non-verbal cues such as facial expressions and gestures), and participating in symbolic/dramatic play (National Research Council 2001). While children with ASD will often demonstrate difficulty with social communication, their patterns of social behavior may vary, with some children actively attempting to engage others socially with variable levels of success, and others seeking to avoid social interaction if possible (Volkmar et al. 1997). When children with ASD initiate interaction their communication attempts may appear

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abnormal to peers (Prizant and Wetherby 2005), leading to miscommunications or misunderstandings (Marans et al. 2005). As a result, social communication is considered a critical instructional target from the early grades (NRC 2001). Although educators acknowledge the importance of social skill instruction for children with ASD, studies indicate that evidence-based practices specifically targeting the social communication of young children with ASD are seldom implemented (Hume et al. 2005; Stahmer 2007).

The Importance of Play

Play is an integral part of a child's early development, leading to progressively complex social and communication skills, and eventually to friendships. While most children acquire these skills through play with others, children with ASD do not track along the standard pattern of play development (Boutot et al. 2005). Given the nature of ASD, play is a primary area of weakness. In fact, one of the defining characteristics of ASD during early development is lack of pretend or imitative play (American Psychiatric Association 2000). Moreover, the play of children with ASD frequently involves fewer symbolic and less complex play activity (Stahmer 1995), difficulty engaging in typical play while alone or with peers (Terpstra et al. 2002), difficulty with symbolic play, continued sensorimotor play beyond developmental level, engaging in parallel play as opposed to social interactive play, and using toys in a repetitive manner, as opposed to their intended use (Libby et al. 1998) (e.g., lining up toy vehicles rather than pushing them along on their wheels). The play of young children with ASD also lacks the complexity of children without ASD (Honey et al. 2007).

Play is observed infrequently among young children with ASD, either because they lack the skills, or because they choose to “do” other things (e.g., engage in self-stimulatory behaviors) (Boutot et al. 2005). Moreover, children with ASD rarely engage in imaginary play (Hughes 1998). When compared to children with other cognitive or developmental disabilities (e.g., intellectual disability), children with ASD are far less likely to engage in purposeful, imaginative play (Hughes 1998). Furthermore, behaviors that are foundational to social-communicative play such as eye contact, joint attention, sharing, and turn-taking are often missing in children with ASD; in addition, they tend to avoid contact with others, making it difficult to establish whether play with others has occurred (Wolfberg 1999). These social interaction challenges point to the critical importance of teaching play skills to children with ASD to promote their development of friendships.

Strategies to Promote Social Interactions and Play in the Early Childhood Classroom

There are a number of possible explanations for the limited use of evidence-based practices in early childhood and elementary classroom settings, primary of which is the inadequate description of how these practices are actually implemented as part of intervention research (Odom et al. 2010). Education research is conducted infrequently in settings representative of typical, diverse early childhood and elementary classrooms (Schertz et al. 2010). Consequently, educators report needing to adapt these strategies to apply them appropriately in their settings (Stahmer 2007). Furthermore, early childhood educators are responsible for providing developmentally suitable instruction for students with a range of learning and behavioral challenges and, in the early elementary grades, for providing instruction on state learning standards. Given this set of responsibilities, educators need specific direction on creating opportunities to address the social communication skills of children with ASD during naturally occurring instructional routines.

The limited focus on social communication in early childhood settings of children with ASD is concerning, given the importance of the early childhood years for the development of social skills, and children with ASD often require support to attain social interaction skills (Paul and Sutherland 2005). An emerging set of evidence-based practices to support the social interaction skills of young children with ASD is available (Goldstein et al. 2007; McConnell 2002). The following three evidence-based strategies are provided to assist early childhood educators in promoting social and play skills for younger children with ASD. These strategies include the use of visual scripts, video modeling, and embedding choice as part of classroom activities.

Scripts

When developing opportunities for children with ASD to interact with their peers, it is important to teach them to initiate such interactions appropriately (Handleman et al. 2005). *Scripts* are explicit written scenarios, skits, or examples and/or visual prompts used to facilitate participation in (i.e., starting and continuing) an interaction or conversation and are implemented in classroom activities wherein children with ASD would be expected to display language (Ganz and Flores 2010; McClannahan and Krantz 2005). Scripts can be used to help children initiate and prepare for conversations and can inform them of how to respond in a social or learning situation (Cohen and Sloan 2007).

Scripts should be aligned with the child's context, verbal skills, and needs, and reflect the child's interests and preferences (McClannahan and Krantz 2005). In the context of social interactions or play, scripts (either pictured or written) provide the statements, questions, and responses that “script” what to say in given social situations. Individualizing scripts for the child, based on the specific, target type of play or social behavior is also important. For maximum applicability and transfer, script implementation often occurs with a teacher or peer just before the social interaction opportunity or play session (Hanline and Riggie 2014).

When implementing scripts, teachers observe and determine which skill the child needs to work on—requesting toys, greeting peers, and so on. Then, the teacher develops scripts based on his/her observations of the phrases typically developing children use during play and evaluation of the language and cognitive abilities of the child with ASD. The teacher creates the scripts, printing the specific script statements on note cards with illustrative photographs or drawings to provide accompanying support (Ganz and Flores 2010). For example, a script for a child who has earned playing with Legos might cue the child to engage a peer and say “Let’s play with Legos.” Another child’s script may prompt him/her to approach a teacher and say “Look” while showing the teacher a drawing. For yet another child, the script might consist of “Watch me swing” before going over to the swings at recess. Scripts can also be used to prompt needs or conversational exchanges (for example, ‘I like... What do you like?’).

A critical consideration when using scripts is to ensure they are faded out gradually in order to transfer control from scripts to natural environmental stimuli such as the presence of another peer or adult (Brown et al. 2008). As children continue to practice the scripts, parts of the script are removed, or faded, so the child is required to provide longer and longer segments of the language independently (McClannahan and Krantz 2005). In this way, the student develops an understanding of how to use the phrase or the pattern of the exchange.

Research on the use of scripts suggests that children with ASD have increased the number of scripted, as well as unscripted, spontaneous communication attempts with peers and teachers (Krantz and McClannahan 1998; Sarokoff et al. 2001). Moreover, script interventions have helped children with ASD increase the duration of time spent playing appropriately in preferred and non-preferred play situations. Children have also shown improvements in play-related behaviors such as social initiations, dialogue with peers, and making choices (Conallen and Reed 2012; Hanline and Riggie 2014).

Video Modeling

Another evidence-based practice that helps children with ASD acquire new social and interpersonal skills is *video modeling* (Bellini and Akullian 2007). Video modeling involves a student repeatedly watching a video of another individual, or themselves in the case of video self-modeling, correctly performing a targeted skill. After viewing the video, the learner has an opportunity to perform the targeted skill in a natural instructional or social setting. Video modeling may be a good match for many learners with ASD because video clips can center the learner’s attention on salient aspects of a task, minimizing the amount of extraneous social information by capturing the target behavior in isolation (Hart and Whalon 2008). Additionally, watching videos is often a preferred activity for children with ASD (Delano and Stone 2014). Because children with ASD must learn to apply these skills in daily interactions, it is important that instruction also occur in natural settings (Schreibman and Ingersoll 2005).

In video modeling, short videos are constructed that depict the language used in specific social situations, such as taking turns during play. Implementing video modeling involves a step-by-step process in which teachers identify the behavior to be featured, produce a video that demonstrates the behavior for the student to watch, check for comprehension, and allow the student the opportunity to apply the new behavior. Video duration generally ranges from about 30 s to 4 min in length (Hanline and Riggie 2014). For example, Michael’s teacher may employ a video model that portrays a peer going to the pool, picking out a life vest, splashing in the water, and enthusiastically playing with friends. Videos can include peers and other individuals for models, or they can use self-modeling in which the child is videotaped demonstrating the particular behaviors and shown the video as both a cue and to reinforce learned behaviors (Ganz and Flores 2010). With recent advances in technology, constructing videos and implementing this approach is relatively straightforward. See Table 1 for a description of the key steps for video modeling implementation which include planning for intervention, creating videos, and implementing video modeling (see also Delano et al. 2013).

Video modeling has positively impacted a variety of skills, including motor, social communication, self-monitoring, functional, and vocational skills (Bellini et al. 2007). In particular, video modeling increases spontaneous requests (Wert and Neisworth 2003), social initiations (Buggey 2005; Nikopoulos and Keenan 2007), social interactions (Sansosti and Powell-Smith 2008) and play (D’Ateno et al. 2003; Nikopoulos and Keenan 2007). Specifically, video modeling has also helped children use toys

Table 1 Steps to creating video models [Reproduced with permission from Colcord et al. (2017)]

<i>Step 1: Recording a video</i>	Taking a video on a tablet or smart cell phone is straightforward. First, launch the camera application from the home screen by touching the camera icon, select video on the bottom of the screen, and then tap the record button to start. To stop recording, tap the red stop button.
<i>Step 2: Identifying target behaviors</i>	To create a VM or VSM identify a student behavior you wish to change or increase. For example, some children may demonstrate difficulty with initiating social interactions. Identify a single behavior that is easily observed in the classroom that the student has previously demonstrated (or can be prompted to demonstrate). Once you have identified the preferred behavior, record the child (or peer model) demonstrating it for at least 3 min
<i>Step 3: Uploading the video</i>	To upload videos, connect the tablet or phone to a computer. If using a Mac, import the video from an iPad/iPhone using the Photos application. Once imported, open the iMovie application and import the video into iMovie by selecting the computer drive in the upper left hand corner of iMovie. Then, select the correct drive and file that the video is in and click the import-selected button in the lower right corner of iMovie
<i>Step 4: Adding narration</i>	To add a short narrative prior to the video, select the title option that is located in the content library in the lower left corner of iMovie. Then, insert three title videos with the same theme. To edit the title screens, click on the default title in the small iMovie screen on the right. On the first title screen, type the student's name and target behavior; for example, "Johnny knows how to greet his friends." On the second title screen type the definition of the target behavior, as in, For Johnny, greeting friends means that Johnny will go over to them, stand close to them, make eye contact, and say, "What's up?" On the third title screen, edit the title so that it transitions to the actual video by stating that the student is demonstrating the target behavior. For example, "Now, here is Johnny greeting his friends."
<i>Step 5: Adding audio</i>	To add audio, click on the microphone image just below and to the left of the video screen in iMovie. By default, all Macs come with a built-in microphone and, once the microphone icon is clicked, the audio starts from the beginning. Click the red record button and begin narrating the introduction. When finished, drag the student video and drop it behind the title videos on the timeline. If your footage needs editing, click and highlight sections of the video, then right-click the mouse. This will open several options including cutting the video clip into smaller, manageable clips
<i>Step 6: Exporting the video</i>	To export the video, click on File, Share, and then select iTunes. Once the video is added to iTunes, open iTunes, click on Movies, then Home Videos. Then, click on the iPad or iPhone image, then Movies, and then Sync Movies. The movie will download onto the iPad or iPhone and can be found by clicking on the videos icon in either device. Then click play
<i>Step 7: Teach the student</i>	Once the VM or VSM has been created and added to the device, teach the student how to use the iPhone/iPad. Most children are familiar with iPads/iPhones and typically have a sense of how to use such devices. Ensure the student knows how to turn on the device and access the video. To access the video simply touch the Videos icon, select the Movies option, and click play on the video. Also, make sure to teach the student to watch the video in its entirety. Once the video has been viewed and the device has been put away, instruction should begin immediately
<i>Step 8: Record student behavior</i>	During instruction, a second iPad or iPhone is used to record student behavior. The video of the student following viewing the video model will yield important data about student behavior. Teachers or paraprofessionals can set up the device to record student behavior after the student watches the video to determine the percentage of time the student demonstrates target behavior

appropriately, engage longer in socio-dramatic play, and demonstrate more reciprocal play interactions (MacDonald et al. 2009).

Sample Vignette Applying Strategies

Consider Reggie, a 4-year-old enrolled in an inclusive pre-school program since his diagnosis of ASD at age 3. He mostly speaks in short, two–three word utterances and can request some preferred toys and edibles with prompting. He is fascinated by dinosaurs and generally likes to play next to, but not with, his peers, demonstrated by his consistent attempts to stand near peers but not engage them while playing. Reggie's teachers want to help Reggie participate more fully with his peers at school. His teachers decide that teaching Reggie to greet his peers at the beginning of playtime would be a good starting point. Individual children typically greet each other by saying, "Hi?" "Want to play?", etc. Usually, Reggie gets the dinosaur bucket, sits in the play area near peers, and begins playing without engaging with them.

session and sits at the snack table without interacting with others.

The teachers decide to use a combination of basic video modeling facilitated by a script. Reggie's teachers wrote a short script for a video and a typical peer played Reggie's role. The video illustrated Reggie's peer greeting 3 different children by going to them, standing close to them, making eye contact, and saying "Hi, would you like to play with me?" Reggie watched the video on an iPad for 3 min prior to playtime each day. After several weeks, his teachers reported that Reggie began greeting others during play, to which his peers responded enthusiastically.

Embedding Choices

Choice making is a strategy that allows children to select from two or more options given by the teacher, thereby conveying their own preferences, while enabling teachers to proactively modify the environment to increase student motivation, promote student independence, and improve

students' social skills (Jolivet et al. 2002). This approach is also helpful in allowing resistant children the opportunity for exerting some control over variables and events in the classroom. Providing opportunities to communicate and make choices also can reduce the chance of interfering behavior. Learning to make small choices and communicate them effectively as a young child can lead to making the bigger choices later on as children develop. Choice can be especially effective for children with ASD, who may display problem behavior to avoid joining group activities or interactions with peers (Hart 2012).

When selecting highly motivating play activity choices, using preference assessments can help determine the child's preferred and non-preferred items/activities (Cannella-Malone et al. 2013; Conallen and Reed 2012). Teachers can consider a variety of choices. For example, children could select which materials they use to play (crayon, marker, paper, white board, or computer), with whom they'll play, where they'll play (on the rug or at the table), and/or the sequence of activities (trains before computers).

Begin by limiting the number of choices available. Instead of offering four or five options, provide two possibilities for play activities. More than that will quickly overwhelm students. Avoid wide open choices such as, "choose a game." Shorter verbalizations ("Do you want Legos or Lincoln Logs?") are preferable to longer ones ("James, would you like to play with Legos or Lincoln Logs during free time?"). Many children with ASD are more successful when they have a concrete way to visually understand what their options are and how to communicate that choice to others. Therefore, pairing verbal choices with concrete objects or visuals of them is preferable because children can see all options; doing so may increase the likelihood that the student will respond to the choice more effectively (Vicker 1999). Moreover, capitalizing on opportunities for verbal expression can address additional social communication goals for children with ASD ("Jasmine, do you want to play Uno or Bingo?"). Finally, when a student has made a choice, teachers should deliver the option in a timely manner to reinforce choice-making behavior and allow the child to experience the outcome of the choice (Hart 2012).

Providing children with ASD materials/activities that are of high interest can increase the amount of time spent engaged in play individually and with peers (Farr et al. 2010). Children with ASD have decreased disruptive behavior and increased play skills when provided choices during play (Carter 2001). Related techniques, such as providing a reason for play and talking about the play activity as it is occurring, may also increase the duration of time children spend playing, engaged in functional play, and interacting with others (Stagnitti et al. 2012). For more information, Green et al. (2011) provide a thorough and easily implemented list of specific steps for embedding choice-making

opportunities in the early childhood classroom as well as general principles guiding strategy use. In sum, choices about *how*, *where*, *with whom*, and *when* they complete a given task may positively affect not only compliance with the task, but also students' engagement, communication, and social skills (Hart 2012).

Importance of Peers

Many of the strategies described necessarily involve peers, particularly given that the target behaviors involve children being able to effectively engage in play with their classmates. Therefore, peer-mediated learning strategies (PMLS) are recommended to be used in tandem with evidence-based practices for teaching social interaction to young children with disabilities (Reichow and Volkmar 2010). PMLS involve teaching typically developing peers to interact with children with disabilities; then, peers and individuals with disabilities are provided opportunities to engage socially (McConnell 2002). Selecting typically-developing peers for participation in PMLS is important and requires careful consideration and planning. Preferably, peer models should display appropriate social skills, be well-liked by other peers, demonstrate consistent school attendance, have a positive (or at least neutral) social interaction history with a target student, and should demonstrate compliance with teacher instructions (Odom and Strain 1986). Moreover, it is best to partner a peer with a child with ASD who shares a similar interest or preferred activity. Additionally, several peers should be selected for each focal child to increase the likelihood of skill generalization and prevent burnout by a single peer model (Rogers 2000).

At the preschool and elementary levels, educators identify one or two peers from within the same classroom as the target students. When explaining to peers what a peer-mediated activity involves, the teacher will want to explain the types of activities, the amount of time activities will last, and how often the structured interactions will occur. Rather than focusing on the target student's areas of difficulty, with preschool and elementary school children, it may be more effective to focus on describing the program as a chance for everyone to make new friends (Thiemann and Kamps 2008). For additional details on steps for implementing PMLS, see Plavnick and MacFarland (2014).

Conclusion

Young children with ASD can benefit from participation in play activities with peers. Play provides opportunities to increase social skills across all developmental domains in an integrated manner. Playing with peers can also provide opportunities to develop a sense of belonging and

Table 2 Online resources for promoting social/play skills for children with ASD

Autism speaks	https://www.autismspeaks.org
Autism speaks is dedicated to promoting solutions, across the spectrum and throughout the life span, for the needs of individuals with autism and their families through advocacy and support; and advancing research into causes and better interventions for autism spectrum disorder and related conditions	
Indiana Resource Center for Autism	https://www.iidc.indiana.edu/pages/irca
The Indiana Resource Center for Autism staff are actively engaged in work that leads to improved outcomes for individuals on the spectrum and their families	
Autism teaching strategies	http://autismteachingstrategies.com
Autism teaching strategies offers social skills activities, social skills games, speech and language activities, and social skills worksheets for teaching children with autism	
Organization for autism research	https://researchautism.org
OAR publishes and provides resources to support families, educators, and clinical professionals. They strive to use science to address the social, educational, and treatment concerns of self-advocates, parents, autism professionals, and caregivers	
Nebraska autism spectrum disorders network	https://www.unl.edu/asdnetwork/
The Nebraska ASD Network is committed to providing up-to-date information and training based on current research about autism spectrum disorders, which consists of workshops that are scheduled throughout the state on a variety of subjects and several websites that offer on-line training opportunities related to autism spectrum disorders	

friendship, goals critical for young children with disabilities (Cook et al. 2012). However, in order for children with disabilities to benefit from the interactions that occur during play and to continue to progress developmentally in play skills, systematic intervention is needed. A variety of evidence-based practices provide guidance to teachers. Many of the practices described take advantage of the strengths exemplified by children with ASD, such as visual processing skills and responding well to structured environments. These practices enable teachers to create a context in which play skills can be developed and used in natural environments, thereby facilitating engagement in play and improving the likelihood for improved interactions with peers (Stagnitti et al. 2012). Additional online resources for promoting play are provided in Table 2.

Establishing a learning environment that supports the varied needs of young learners with ASD often means challenging our perceptions of appropriate behavior, and proactively creating, and taking advantage of social interaction opportunities when they occur. This process requires modifying the classroom using evidence-based practices. Given the complexity of early childhood and elementary school settings, embedding opportunities for students with ASD to learn and apply social communication skills during typical classroom and play activities in necessary. Building such opportunities requires involvement from the primary teacher as well as paraprofessionals and other teachers the child may come in to contact with during the school day.

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