



Teaching Play Skills to Children with Disabilities: Research-Based Interventions and Practices

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Abstract

Play is a critical milestone that contributes to the learning and development of young children in multiple ways and is essential to their well-being. Play is also considered as a central component to promote school readiness and incorporates pre-literacy, language and numeracy skills. However, play deficits seem to be acutely apparent in some children with disabilities. This highlights the need to come to terms with the best evidence and explore the promising practices related to improved play skills for young children with disabilities. The purpose of this paper is to provide an overview of play-based learning in early childhood and early childhood special education and provide research-based recommendations on teaching play skills to young children with disabilities.

Keywords Play · Play skills · Play-based practices · Children with disabilities · Early childhood special education

Young children are expected to be playful (Ginsburg 2007). Young children acquire social knowledge and skills in play and learn from their ongoing experiences with the world rather than from less contextually relevant experiences (Nelson et al. 2007). Play with or near peers is a primary form of engagement for young children and a major developmental indicator (Wong and Kasari 2012). Over many centuries, philosophers, theorists, educationalists and more recently, policy makers have worked hard to define the nature of childhood play and the purposes of education (Bass and Mulick 2007). Children learn best in an environment which allows them to explore, discover, and play. Play promotes independent participation across settings (e.g., homes, classrooms, and communities) and allows children to become active members of their social contexts (Frey and Kaiser 2011). Play is related to better social and communication skills (Lifter et al. 2011), promotes improved physical and mental health and provides a critical context for developing and fostering relationships with care givers and peers. It is also closely tied to the development of cognitive, socio-emotional, and physical behaviors (Hirsh-Pasek et al. 2009).

However, this critical avenue of learning is often closed to young children with disabilities who may have difficulty initiating and engaging in play interactions with other children (Nelson et al. 2007). These differences in play appear to be stable over time despite learning and growth in other domains (Barton 2015). In what follows, this paper aims to give an overview of play deficits in children with disabilities and recommend empirically-based interventions that can be used to improve play skills in young children with special needs.

Play Defined

Although there are many different ways to define play, researchers agree on some commonalities among all definitions (Ginsburg 2007). Play may be defined as a state of being in which an individual experiences increased energy focusing on an activity, cheerfulness and joy which is accompanied by smiles and laughter, feeling an ease of burden resulting from non-literality, renewed sense of optimism, and the beginning of new possibilities (Children's Play Information Service 2002). Play also includes an element of being freely chosen by the child and personally directed in a process of trial and error in which the child learns new activities (Nelson et al. 2007; Wong and Kasari 2012). Play is intrinsically motivating, flexible, spontaneous,

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and voluntary, allowing children to use their natural environment to promote learning and socialization (Kasari et al. 2013). There are also two overarching types of play taxonomies: social play (Parten 1932) and cognitive play (Piaget 1962). These play taxonomies propose a sequence for the emergence of specific types of play behaviors. Barton (2016) describes these play types and subtypes in more details (see Table 1).

Play Skills in Children with Disabilities

Children with disabilities are at distinct disadvantage when it comes to play. Mobility problems make it difficult, if not impossible to play hide and seek, visual impairments impede a child's ability to find and investigate toys, and cognitive disabilities limit the development of pretend play. In fact any disability (physical, cognitive, or sensory) poses a barrier to spontaneous engagement in play and playful activities (Barton and Wolery 2010). Children with disabilities engage in less complex and fewer play behaviors than their typically developing peers when given the same materials in the same settings (Barton 2015; Kasari et al. 2013). Children with disabilities including cognitive disabilities, intellectual disabilities, sensory disabilities, autism spectrum disorder (ASD), multiple disabilities, speech or language impairments, and emotional disturbance usually demonstrate social interaction difficulties, communication challenges, deficits in developing, maintaining, and understanding relationships, have a restricted range of interests that may be abnormal or unconventional and experience limited receptive and expressive communication skills (American Psychiatric Association 2013). They play less often and demonstrate fewer varied pretend play behaviors than children with typical development (Kasari et al. 2013).

Play deficits seem to be acutely apparent in children with ASD (Barton 2015). Children with ASD (a) produce less symbolic play behaviors, (b) exhibit less variety in their play behaviors, (c) exhibit less complex play behaviors, and (d) exhibit less variety and complexity in sequences of play behaviors than children with other disabilities or children without disabilities (Barton 2015; Barton and Pavilanis 2012; Kasari et al. 2013). The play of young children with ASD is frequently impoverished in both form and content. They may engage in a single play sequence for hours or months and may manipulate play objects in a stereotypic manner. Pretend play may be nonexistent or extremely limited in variety (Wong and Kasari 2012). In addition, children with ASD often have difficulty conveying a desire to play or join in activities and they may fail to respond to invitations of others to play, initiate interactions while playing, make a request to peers or adults and cooperatively share toys (Barton and Wolery 2008). The repetitive, stereotypic play behaviors are less likely to afford multiple, contextually

relevant opportunities for social interactions with peers which is why children with ASD are often found outside of peer play groups (Barton 2015). Play interests in children with ASD are typically dominated by sensory and physical play which require more modeling and guided participation by peers or adults to be able to socially interact with their peers and engage meaningfully in play activities (Frey and Kaiser 2011).

This distinction among play in typical children and children with disabilities has important implications for play interventions with young children with special needs. Successful inclusion of young children with disabilities in preschool classes happens when these children are in proximity to peers, socialize with them, and actively engage in typical preschool activities including play (Nelson et al. 2007). The Individuals with Disabilities Education Improvement Act (IDEA) required the field of early childhood (EC)/ early childhood special education (ECSE) to minimize the potential for developmental delay in infants and toddlers with disabilities which can emphasize a more central role of play in areas like assessment, interaction, instruction and communication (Hirsh-Pasek et al. 2009).

Without highly structured instructional cues, children with disabilities tend to use fewer novel play behaviors, use less variety and complexity in their play, display less variety in their choice of toys and use fewer actions on toys (Lifter et al. 2011). Although highly correlated with skills across other domains (e.g., communication, social, motor), the unique and idiosyncratic nature of play suggests that effective intervention approaches might need to be specifically adapted and tailored to effectively and efficiently increase the complexity and duration of a child's play repertoire (Barton 2016). In the following section, a summary of research-based interventions that can be used to teach play skills to children with disabilities are discussed.

Play Interventions for Young Children with Disabilities

Environmental Interventions

In general, children identified with disabilities will have more interactions with peers when toys are limited and well chosen, when children with disabilities are grouped with peers who demonstrate appropriate social skills, when there is minimal adult–child interaction, when play and joint attention are the target behaviors, and when the play area is relatively small (Wong 2013). Environmental arrangement can have a positive impact on expanding play skills and social interactions of children with disabilities (Ginsburg 2007). Appropriately arranging the play environment can be considered as a nonintrusive and relatively

Table 1 Definitions of social and cognitive play types. *Source* Adapted from Barton (2016)

Age at onset	Social play	Cognitive play
Infants	Defining the child's play in relation to whom he or she is playing with or near	Defining the child's play in relation to object he or she is using
	Unoccupied	Sensorimotor
	Infants watch people and things with momentary interest rather than play with them	Infants explore the world by touching, biting, tasting, hitting, kicking, etc.
Toddler	Solitary	Children play alone with different toys than those of peers near him/her
	Onlooker	Children watch each other play and talk to each other
	Parallel	Children explore objects by stacking, building, grouping, etc. Children use objects in the manner in which they are suppose to be used Children demonstrate nonliteral use of actual or miniature objects in the manner they are supposed to be used without the reality-based outcome Children use objects as if they were something else
Preschoolers	Associative	Functional play
	Children play near each other, with the same materials, and talk about their play and the materials but mostly engage in their own play behaviors	Functional play with pretense
	Cooperative	Symbolic play
		Object substitution
	Children play together with the same toys for the same purpose. The play activity is based on a goal or topic	Imagining absent objects
		Assigning absent attributes
		Social pretend play
		Children engage in various forms of functional play with pretense and symbolic play with peers

easy approach to facilitate social interactions among children (Chandler et al. 1992; Papacek et al. 2016). Environmental arrangement can have different types and involve components that deal with social, physical, or temporal arrangement of the environment. Below are some of the widely used environmental arrangement models and strategies that can facilitate engagement of children with disabilities in meaningful play activities.

Social and Physical Arrangements

Choosing appropriate play materials, effective groupings of children, adult facilitation and using social stories are some examples of social and physical environmental arrangements that can result in meaningful play engagement of children with disabilities in an inclusive setting. Adult facilitation can include setting interactive activities and arranging play environment and materials (e.g., limiting the numbers of play centers open, choosing appropriate toys like social toys or toys that encourage shared and cooperative play) so that all children's participation is essential. Without adult facilitation, children with disabilities may prefer to play alone, isolating themselves from peers and social activities (Wong and Kasari 2012). However, if teachers provide young children with disabilities with appropriate context and toys without guided participation and modeling strategies, social interactions still will not likely to occur during play. Therefore, additional techniques such as prompting and modeling may be needed to ensure successful interaction and engagement (Papacek et al. 2016). More modeling and prompting strategies will be discussed later in this paper. Adult facilitation can also be done by child grouping to provide children with disabilities with the guided assistance they need to socially engaged in play activities (Chandler et al. 1992; Wong and Kasari 2012; Papacek et al. 2016). Creating interactive activities with a more socially competent peer allows teachers to provide structured play opportunities for children with disabilities to improve their social interaction skills within the classroom environment. Choosing a peer may be based on the peer's level of tolerance, empathy, and his or her preference of activities. However, considering the verbal abilities of the child with disability, peers may require facilitation to initiate social interaction and to participate within the activity (Petursdottir et al. 2007). Social stories can help explaining the circumstances, perspectives, and expected behaviors that occur during a specific event or situation. They can be particularly helpful when preparing children with disabilities for an out of the ordinary situation, such as hosting or going to a play date (Papacek et al. 2016). Table 2 includes more details on these environmental arrangements.

Table 2 Physical and social environmental arrangement strategies. *Source* Adapted from Papacek et al. (2016)

Strategies	Description	Examples
Choose appropriate toys	Encourages a broad range of play opportunities with peers and appropriate toys Create more social interactions increasing relationships and communication skills. Children will play longer when allowed to choose their playthings/toys	Cause and effect (race track with cars), pretend play (baby, clothes, and crib), creativity (kitchen and food), active (balls, bikes), cooperative (board games, building things such as Legos), manipulative (coloring, beading)
Child grouping	Using peers to help children with disability engage in appropriate social interactions. Choosing a peer may be based on the peer's level of tolerance, empathy, and his or her preference of activities	Placing children who possess a lesser amount of developed social skills alongside or near children with greater social skills during small and large group activities
Adult facilitation	Setting interactive activities, assisting with communication, and arranging play activities so that all children's participation is essential and assists in the facilitation of when activities begin and end	Give positive nonverbal (high fives and smiles) and verbal ("You are playing so nicely together") reinforcers when children are engaged appropriately in social interactions. Model appropriate communication and give gestural prompts
Social stories	Describes how someone would choose a toy, how to request a friend to play, and/or how to share toys. Social stories can include computer-generated icon pictures or "real" pictures that include the children that the story is targeting. The latter is a preferred method to ensure children assimilate themselves into the situation	When I want to ask my friend to play, I can: Stand close to them Say their name and ask: "can I play with you?" Walk for them to look at me and to respond

Integrated Play Groups (IPG) and Friend 2 Friend (F2F)

The IPG Model is designed to support children with ASD of diverse ages (3–11) and abilities to engage in mutual play experiences with typically developing peers/siblings as playmates. IPG focuses on guiding children's participation in culturally valued activities (i.e., play) using guidance, support, and challenge of partners who have different skills (Wolfberg 2003). Emphasis is also placed on maximizing children's developmental potentials and increasing their intrinsic desire to play, and socially interact with their peers. Play group is composed of three to five children including typically developing peers/siblings and the children with ASD. Prior to the first session of play, the typically developing peers take part in a program called "Friend 2 Friend" that offers an opportunity for the typically developing children to meet and ask questions while gaining insight about what to expect when they begin their playgroups with their friend with ASD (Burton and Wolfberg 2008).

Friend 2 Friend Model is designed to provide a framework for demystifying autism for children aged three and up (McCracken 2006). This Model includes a puppet program that is designed to introduce young typically developing children to the characteristics associated with ASD. There is a four-step teaching process that includes: (a) modeling-which provides a visual model about the characteristics of autism and helps typically developing children form a concept of autism which subsequently becomes the basis for understanding and acceptance for the children with the ASD, (b) labeling-which labels the characteristics that have been modeled and provides the children with a name for what they do not understand and helps them accept the characteristics or behaviors as genuine or real, (c) explaining-which explains the sometime puzzling, social, communicative, or self-regulating characteristics that peers may see children with ASD exhibit and (d) normalizing-which is the final and most significant step in the F2F teaching process to support peers in empathizing with children with the ASD. By normalizing, the otherwise puzzling characteristics of children with ASD is linked with the common characteristics that all children exhibit. Such normalizing of the characteristics of autism provides typically developing children with an opportunity for emotional perspective taking, which allows them to truly walk in the shoes of the child with ASD (Burton and Wolfberg 2008; McCracken 2006).

Once the typically-developing peers are prepared within the F2F model, they will be accepting of and responsive to the unique characteristics of children with ASD. Support within the IPG model during play sessions includes monitoring play initiations, scaffolding play (posing questions, commenting, giving suggestions, verbal and visual prompting), promoting the use of social communication by relevant verbal or non-verbal social communication cues that will

serve to elicit and sustain mutual engagement in play, and play guidance (joint focus, joint attention, role enactment, role playing), in which children are supported in experiences slightly beyond their capacity. IPG and F2F are complementary models that are designed to support children with ASD in play and friendships with typical peers in inclusive setting (Burton and Wolfberg 2008).

Peer Implemented Interventions

Peer implemented interventions provide opportunities for increasing social interactions among children with disabilities and their typically developing peers, that increases the social interactions between children with and without disabilities (English et al. 1997). Peer implemented interventions provide facilitation and training to the typically developing peers to initiate, prompt, and reinforce social interactions with their peer with disabilities, thereby resulting in improvements in social play behaviors of children with disabilities rather than simply having them in close proximity to their typically developing peers (Bass and Mulick 2007). Peer implemented interventions also provide multiple opportunities for children with disabilities to participate in social referencing, reciprocity, and initiation/responding. For example, the caregiver may prompt the typically developing peer to offer a preferred toy or object that is of interest to a child with disability to initiate an interaction which might increase the likelihood of a reciprocal play situation that involves turn taking and exchanges (e.g., reciprocity) between the two peers (Wong and Kasari 2012).

By using simple strategies, children with disabilities can learn a variety of initiation and response strategies from their typically developing peers such as initiating play. The social initiation may include gestures, vocalizations, or words, (e.g., holding out a toy to a peer; vocalizing in a peer's direction while making eye contact with them; reaching hand toward peer while gazing at a toy held by a peer) (Barton and Ledford 2018). 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 (Wolfberg 2003). "Stay, Play, Talk" is a simple strategy that is designed to facilitate peer interactions between a child with disability and a typically developing peer (English et al. 1997). Typically developing peers are taught 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 and Thiemann-Bourque 2012).

Playdates

Playdates are scheduled time periods for children with disabilities to interact with another child in both structured and unstructured activities. Children with disabilities may not be able to generalize skills across environments and people, which means even when they have mastered a specific skill in one setting with one person, they may not be able to demonstrate the same skill in another setting with another person. Playdates provide children with disabilities the appropriate experience to generalize their skills with different peers and in a variety of environments as well as develop friendships and have fun (Rosenberg and Boulware 2005). Before the child with disability is ready for formal Playdates it is essential that they are involved with their peers even if they do not have independent play skills. Just learning to be in close proximity to others is supportive for children with disabilities in moving toward developing play skills (Barton and Pavilanis 2012). Also, teaching children with a disability how to move from one activity to another in a variety of settings is an important and essential skill to prepare them for the many transitions that can occur within a Playdate. Providing appropriate prompts and reinforcements can support smooth transitions when it is time for children with disabilities to engage in Playdates with a peer (Rosenberg and Boulware 2005).

Play Materials

Other environmental arrangement strategy involves arranging play materials. Children with disabilities need more time and opportunity to become familiar with toys, materials, and equipment in order to discover the different ways to interact with them. In particular, to teach children with disabilities, much repetition is required for them to learn from the materials. Therefore, toys, materials, and other equipment should not be changed or removed too often. Children with disabilities should be given the opportunity to interact with this equipment until they have had a chance to master it completely (Klein et al. 2001).

Size, density, organization, and thematic arrangement are all considerations with play materials. A wide range of highly motivating sensory, motor, exploratory, constructive and socio-dramatic props with high potentials for interactive and imaginative play are suggested as play materials. The types of material should also vary in degree of structure and complexity to afford opportunities to support children who present diverse interest, learning styles and developmental levels. The important point is to identify play materials that are motivating, allowing for mutual enjoyment between typically developing peers and children with disabilities (Stockall et al. 2014).

Assistive Technologies Interventions

According to Individuals with Disabilities Education Act (2004), assistive technology (AT) devices and services can be used to increase, maintain, or improve the functional capabilities of children with disabilities. Although a range of AT items is available, many families of young children prefer low tech solutions since they are readily available, inexpensive, easy to use and offer a wide range of options (Lane and Mistrett 2002). Several categories of AT can be used in combination to create interactive play environments that is unique to each child and family needs. The mostly adopted low tech categories of AT include: adapted commercial toys, positioning and mobility items, specialize AT item, and communication AT items. Table 3 provides more details on these categories (adapted from Alper and Raharirina 2006; Lane and Mistrett 2002).

Modeling and Prompting Interventions

Modeling

Adult modeling and prompting have been documented to increase play behaviors in young children with disabilities including children with ASD (Barton 2016). In naturalistic approaches, the adult follows the child's lead in play, often contingently imitating his/her play actions, and models and prompts a play behavior that is both developmentally appropriate and related to the child's attention and interests (Barton 2015). Different schedules of prompting can be used. Modeling can also be done through video. With video modeling (VM), first a video recording of the model demonstrating the behavior is created. The child observes the video recording of the model, and then the child is given the opportunity to imitate the modeled behavior (Barton and Wolery 2008). Video modeling can be more effective than live modeling because (a) the adult has more control over the model, (b) multiple exemplars can be created to promote generalization, (c) the videos can be repeatedly shown to a child and reused across children, (d) the video removes the social aspect of modeling which might be important for children with ASD, and (e) the videos can be edited to remove extraneous or distracting contextual variables (Barton 2016).

Prompting Hierarchy

Least to most promoting procedures begin with the natural antecedent (i.e., typically the presentation of the toys) and the adult delivers increasingly intrusive prompts only if the child does not demonstrate the target play behaviors. In most studies a three-step prompting hierarchy was used that included (a) presentation of the toys, (b) live modeling or verbal prompting, and (3) physical hand-over-hand

Table 3 Assistive technology categories

Category	Purpose	Examples
Adapted commercial toys	Help to highlight, extend, attach, stabilize, or confine toys to promote increased interactions	- Off-the shelf play materials that can be adapted for easier use –Highlights (e.g., out-lines, emphasizing materials, etc.) assist in focusing a child's attention on how a toy is used –Attachers (e.g., links, shoelaces, elasticribbon) bring a toy within reach and allow the child to retrieve it –Extenders (e.g., foam, molded plastic) may help children press too-small buttons or keys and stabilizers (e.g., velcro, nonslip material), can hold objects in place or connect them to other devices –Confinement materials (e.g., planter bases, box tops, hula hoops) help keep toys from getting out of the child's reach or visual field –AT supports to help children in semi-reclined (sling seat), side-lying (towels, E-Z lyres) prone (wedges, towels), kneeling (floor tables, stairs), sitting (corner chairs) and standing (exersaucer) positions –Commercial walkers like toy shopping carts can be adapted with weights to become more stable or can have Velcro applied around the wheels to slow them to help with moving and exploring the environment –Low rocking and riding toys can also provide options for children to support their position and movement
Positioning and mobility items	Are designed for those children with disabilities that have difficulty changing positions or need assistance in moving while playing	
Specialized AT items	Make it possible for children with disabilities to manipulate the play objects and develop and extend cause and effect relationships and cooperative play skills with siblings and peers	Special interfaces such as battery adapters, timers, latch devices, and series adapters (turn a toy on and off with a movement of a body part against a switch)
Communication AT items	Recorded messages to incorporate language into play and other daily activities and provide a way for children with communicative deficits to express themselves	–Photos or line drawings to help children select what they want to say –More sophisticated communication devices like tablet computers with touch-screens to help the child navigate through pages of icons and communicate different messages when pushed (range from very easy to use for the child; with one button on the screen up through very complex)

prompting (Barton and Pavilanis 2012). Since least to most prompting hierarchies allow the adult to build off the child's play which complements rather than interrupts the play interaction, they are considered to be more effective than direct, single prompt procedures or other intervention approaches (Barton and Wolery 2008).

Errorless Prompting

Errorless respond prompting is an instructional strategy that ensures children respond correctly. Children with disabilities in particular children with ASD do not learn as successfully from their mistakes as typically developing children, but instead continue to repeat them (Barton 2016). Frustration following incorrect responses associated with trial and error teaching can lead to problem behavior such as tantrums, aggression, and self-injury. Using an initial prompt, before the child has an opportunity to respond incorrectly, avoids discouragement and builds success and self-confidence in a new skill (Colozzi et al. 2008). The immediate prompt provided as the skills are taught, prevents any chance for incorrect responses. As each skill is taught, children are provided with a prompt or cue immediately following an instruction. The immediate prompt prevents any chance for incorrect responses (Stahmer et al. 2013). Unlike other teaching procedures where opportunities for mistakes are allowed and then corrected through prompting, the immediate prompting in errorless teaching ensures that a child can only respond correctly. Prompts are systematically removed until children are able to respond correctly on their own (Colozzi et al. 2008).

Time Delay Prompting

Time delay is a prompt fading strategy that systematically increases the amount of time between the instruction and the prompt (Buron and Wolfberg 2008). This delaying of prompts gives children a brief window of opportunity to give a correct response independently. As the child begins to respond independently before a prompt is given, the delay is continuously increased until it is faded out completely. Responses provided independently, before any assistance is given, and are immediately followed by positive reinforcement (Wolfberg 2003).

Specific Intervention Approaches

Discrete Trial Training

Discrete trial training (DDT) is a method of teaching in simplified and structured steps. Instead of teaching an entire skill in one go, the skill is broken down and built-up using discrete trials that teach each step one at a time. In discrete

trial training, the learning environment is highly structured and controlled by the teacher/therapist. Play materials are chosen by the teacher/therapist, and the child is presented with a clear instruction for a response, typically the imitation of the therapist's model or compliance with a verbal instruction (Stahmer et al. 2013). Acquisition is facilitated by the use of explicit prompting and shaping techniques and systematic reinforcement contingent upon the child's production of the target response. Play responses targeted early in treatment or with lower functioning children are usually one-step actions, such as rolling a car or pushing a popup toy. When teaching extended play sequences, the teacher breaks down the sequence into its component parts. For example, "playing with the blocks" might include: reaching out to the blocks, grabbing the blocks, stacking them and organizing the sizes. Each individual step is taught individually and forward or backward chaining is used to link the steps together in the correct order (Moes and Frea 2002; Stahmer et al. 2013). DDT is effective for teaching different types of play, from simple object manipulation to complex play themes (Lifter et al. 2011).

Pivotal Response Training

Pivotal response training (PRT) is a specific intervention approach that was developed by adapting highly structured, direct teaching (e.g., discrete trial training) for the use in more naturalistic formats. PRT involves the systematic use of adult prompting and reinforcement while following the child's lead in play and using his/her preferences (Koegel and Koegel 2006). PRT was developed to create a more efficient and effective intervention by enhancing four pivotal learning variables: motivation, responding to multiple cues, self-management, and self-initiations. According to theory, these skills are pivotal because they are the foundational skills upon which learners with ASD can make widespread and generalized improvements in many other areas (Koegel and Koegel 2012). This method grew out of discrete trial training and can be used in a structured or naturalistic format. PRT is specifically designed to increase a child's motivation to participate in learning new skills. PRT involves specific strategies such as (a) clear instructions and questions presented by the therapist, (b) child choice of stimuli (based on choices offered by the therapist) (c) combination of maintenance tasks (previously mastered tasks) (d) direct reinforcement (the chosen stimuli is the reinforcer) (e) reinforcement of reasonable, purposeful attempts at correct responding and (f) turn taking to allow modeling and appropriate pace of interaction (Stahmer et al. 2013).

PRT has proven to be a naturalistic training method that is structured enough to help children with disabilities learn simple and complex play skills, while still flexible enough

to allow them to remain creative in their play (Barton 2016). An example of using the specific steps of pivotal response training to teach symbolic play might be as follows. A child may choose to play with a set of toy cars (choice). The child is then given a couple of cars and asked ‘What can we do with these toys?’ (acquisition task). The child is expected to use the cars in a symbolic manner such as to ‘drive’ the car. If the child does not respond, the therapist would model the symbolic behavior (turn taking). The car would then be returned to the child. If the child still does not respond, a new toy would be chosen, or the therapist could assist the child. When the child does respond, the entire set of cars would be given to the child to play with in any manner he/she chooses, thus reinforcing the new behavior. This may include using the car in a stereotyped manner. The child can be reinforced for single or multiple play steps. The therapist has the opportunity to model more complex play and provide new play ideas on his/her turn (Stahmer et al. 2013).

Reciprocal Imitation Training

A variation of the pivotal response training procedure for teaching play skills is reciprocal imitation training (RIT). Reciprocal imitation training was developed to teach spontaneous imitation skills to young children with ASD in a play environment. However, this intervention technique has also been shown to increase pretend play actions (Koegel et al. 2005). RIT is designed to encourage mutual or reciprocal imitation of play actions between a therapist and child. This procedure includes contingent imitation in which the therapist imitates actions and vocalizations of the child’s linguistic mapping, in which the therapist labels the actions that he/she and the child are simultaneously performing as well as pivotal response training strategies such as: child choice of stimuli, direct reinforcement, reinforcement of reasonable, purposeful attempts at correct responding, and direct prompting of the correct response (Koegel and Koegel 2006).

DIR Floortime

Developmental, individual differences, relationship-based model (DIR) or, in practice, “Floortime” emphasizes that success with any child is based on the ability of the play partner to meet the child on his/her developmental level, strengthens potential underlying neurological elements that may be impeding development and emphasizes the critical emotional connection between the impacted child and the play partner (Greenspan and Wieder 2009). The term “Floortime” refers to the actual process through which therapists, parents, and other caregivers make a special effort to tailor interactions to meet the child at his/her unique functional level and within the context of his/her processing

difficulties. This model clarifies the basis of children’s behaviors, with Floortime sessions supporting the reciprocal relationship between child and caregiver (Davis et al. 2014; Greenspan and Wieder 2009). The technique involves having play partners get down on the floor and follow the child’s lead to encourage the child’s initiative and purposeful behavior, deepen engagement, lengthen mutual attention, and develop symbolic capacities. In Floortime, therapists and parents engage children through the activities each child enjoys. They enter the child’s games. They follow the child’s lead. Therapists teach parents how to direct their children into increasingly complex interactions, help the child maintain focus to sharpen interactions and abstract, logical thinking. For example, if the child is tapping a toy truck, the parent might tap a toy car in the same way. To encourage interaction, the parent might then put the car in front of the child’s truck or add language to the game. As children mature, therapists and parents tailor the strategies to match a child’s developing interests and higher levels of interaction. For example, instead of playing with toy trucks, parents can engage with model airplanes or even ideas and academic fields of special interest to their child (Greenspan and Wieder 2009). This process, called “opening and closing circles of communication,” remains central to the Floortime approach (Davis et al. 2014).

Play Books and Play Scripts

Scripts also have been used to teach young children with disabilities to engage in social and object play. Many children with ASD may find it challenging to play with toys appropriately or in the manner in which they were intended for use. Playbooks and play scripts are visual strategies that are used to support children with ASD increase play skills. Play scripts are visual prompts that help guide the play (Neville and Bachor 2002). For play scripts to be effective the child needs to be able to attend to others actions and imitate them in a sequence of multiple actions (for example, you’re able to say “copy me”, do several motor movements such as unzip coat, hang up hat and place shoes in closet, and the child copies your actions). Prepared script playbooks and play scripts are very similar tools for teaching play in that they show simple sequences of steps in a play routine (Petursdottir et al. 2007). For both strategies a book format may be used and each page of the book represents one step in a play sequence. In a playbook, only pictures are used to illustrate the sequence (for example, stacking Legos, or coloring a picture). However, in a play script both pictures and words are used to illustrate the sequence (e.g., playing with a doll house, driving toy trains). Play scripts can be short or long, based on a child’s current skills. Typically, the script starts out in a short form that the child can quickly learn. Once a child is successful with the interactions in the

short script, additions are made to facilitate spontaneous and creative responses during the play (Neville and Bachor 2002; Petursdottir et al. 2007).

Intervention Implementation Guidelines

Implementation is the critical link between research and practice (Cook and Odom 2013). According to Kelly and Perkins (2012), implementation science is concerned with an understanding of the processes, procedures, and conditions that promote or impede the transfer, adoption, and use of evidence-based intervention practices in the context of typical, everyday settings (e.g., early childhood classrooms). Fixsen et al. (2013) proposed a simple formula to represent the critical interaction of research efficacy and practice (implementation) in generating outcomes:

Effective intervention $\times$ effective implementation = improved outcomes.

The other very important factor within implementation science to be considered is fidelity. Fidelity refers to the use of the key characteristics of an evidence/research-based practice in a manner that mirrors what was learned from research about the relationship between the characteristics and consequences of a practice. An implementation science perspective of fidelity indicates the need to consider adherence to the key characteristics of both implementation and intervention practices (Trivette and Dunst 2011). The focus on the fidelity or integrity of a practice is expected or is hypothesized to have intended effects or benefits with intended recipients (e.g., children or parents). Fidelity of the methods or procedures used to promote practitioners' adoption and use of a program or practice is generally not explicitly part of existing models or frameworks in the field or receives only tangential mention (Dunst et al. 2013).

Regarding play behaviors of children with disabilities, intervention should focus on specific behaviors that are key for successful peer social interactions. Landy and Osofsky (2009) recommended three broad categories of skills that are important for positive peer social interactions: (a) skills for play entry, (b) skills for maintaining play and forming friendships, and (c) skills for sharing and cooperating. In making decisions about an individual child's intervention targets, early educators should consult with the team of adults involved with the child including the family, special and general early education teachers, and any related service personnel (Laushey and Heflin 2000). Each of these team members will bring different perspectives to understanding the child's current social competence as well as his or her needs for skill development to be successful across various social contexts.

In finalizing intervention targets, early educators and team members need to observe children to gather information about their current peer interactions. Interventions should focus on children's actual behaviors rather than on what adults think children should do (Rogers 2000).

Team members can compare what children do with documented developmental patterns of early peer relationships, such as the development from parallel play to simple social play, cooperative social play, sophisticated social interactions, and stable friendships. Observations of the child's typical and highest levels of social play with peers can provide reasonable expectations when setting goals for intervention (Guralnick 2001). Observation can also be used to monitor the effectiveness of interventions for the child and make necessary adjustments, because interventions must be tailored to individual children and modified across time to reflect changes in child skills (Mason et al. 2014).

Another important intervention guideline to consider is implementing one intervention at a time, especially at first. Comprehensive or combined interventions that involve two or more interventions may not necessarily be more effective. Beginning with just one intervention is more likely to be feasible especially working with young children (McConnell 2002). Implementing an intervention in more than one place simultaneously, may help with generalization and maintenance of the skill(s) to a variety of situations and may help children remember what they have learned over time on the playground, on field trips, and during snacks and meals (Hollingsworth 2005). Finally, all adults working with the children, including teachers, paraprofessionals, volunteers, or other professionals, should be trained to conduct the interventions and to observe children to determine how well interventions are working (Hollingsworth 2005; Laushey and Heflin 2000). Teachers have many demands on their time and involving paraprofessionals and other adults in the classroom may help encourage the consistent use of interventions to promote children's social interactions (Hollingsworth 2005).

Conclusion

This paper discussed the benefits of play in EC and play deficits in children with disabilities along with a summary of effective interventions to teach play skills to young children with disabilities. Play affords contextually relevant instructional opportunities for acquiring, maintaining, and generalizing other skills and is considered as an activity that can

Table 4 Online resources

Resources

Autism Internet Modules (AIM): <https://autisminternetmodules.org>

AIM is designed to provide high-quality information and professional development for anyone who supports, instructs, works with, or lives with someone with autism. Each module guides you through case studies, instructional videos, pre- and post-assessments, a glossary, and much more. AIM modules are available at no cost. If you would like to receive credit for your time on AIM, certificate and credit options are available for a fee

Autism Focused Intervention Resources and Modules (AFIRM): <https://afirm.fpg.unc.edu>

AFIRM Modules are designed to help you learn the step-by-step process of planning for, using, and monitoring an EBP with learners with ASD from birth to 22 years of age. Supplemental materials and handouts are available for download

IRIS Center: <https://iris.peabody.vanderbilt.edu>

The IRIS Center is a national center in the United States dedicated to improving education outcomes for all children, especially those with disabilities birth to age 21, through the use of effective evidence-based practices and interventions

Center on the Social and Emotional Foundations for Early Learning (CSEFEL): <http://csefel.vanderbilt.edu/resources/strategies.html#list>

The Center on the Social and Emotional Foundations for Early Learning (CSEFEL) is focused on promoting the social emotional development and school readiness of young children birth to age 5. CSEFEL is a national resource center funded by the Office of Head Start and Child Care Bureau for disseminating research and evidence-based practices to early childhood programs across the United States

Universal Design for Learning (UDL) and Assistive Technology: <http://www.udlcenter.org>

The UDL Guidelines can assist anyone who plans lessons/units of study or develops curricula (goals, methods, materials, and assessments) to reduce barriers, as well as optimize levels of challenge and support, to meet the needs of all learners from the start. These guidelines can also help educators identify the assistive technologies that can be used to enhance learning experiences of students

have reinforcing properties for other skills (Barton 2016; Lifter et al. 2011).

Young children with or at risk for disabilities who engage in play less often and demonstrate less variety and complexity in their play should have instructional goals focused on play. Intentional, systematic interventions that are characterized by a focus on developmentally appropriate play goals, child-focused play behaviors, individualized instruction, and attention to specific behaviors are necessary to increase play skills in young children with disabilities (Barton and Wolery 2010). Careful consideration should be given to the instructional procedures (e.g., least to most prompting, video modeling), specific prompts chosen (e.g., verbal, visual, modeling), and the types of reinforcement used. The impact on generalization and maintenance of interventions along with the procedural fidelity should also be considered while planning play-based instructional procedure.

The strategies and interventions that were presented in this paper can lay out a systematic and structured way of teaching play skills to children with disabilities. A list of helpful online resources regarding different interventions and practices are provided to help the readers with further exploration of research-based practices to improve meaningful engagement of children with disabilities (see Table 4). Using the guidelines and research-based interventions discussed, EC/ECSE professionals can provide opportunities for children with disabilities to engage in play activities along their typically developing peers and increase their social communication skills.

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