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10 Play in Children with Autism Spectrum and Other Neurodevelopmental Disorders

Autism spectrum disorder (ASD) is a complex mental condition manifested by a wide range of cognitive, emotional, and neurobehavioural disabilities. ASD begins early in childhood (before the age of three) and lasts throughout life. Core deficits cause substantial impairments in social interaction and communication as well as the presence of fixed, stereotyped patterns of behaviour and a lack of interest in peers (APA, 2013). The first signs for the parents are that their child does not react to their presence nor responds to his or her name (despite the fact that hearing is intact) or is focusing on certain objects for a long time without initiating contact with people (Baron-Cohen, 2004). Moreover, a change of setting does not modify the core features of their behaviour, which differentiates ASD children from children with other developmental disorders (Stanković et al., 2012).

From this point of view, as a neurodevelopmental disorder, ASD shares many characteristics with those psychiatric conditions that typically manifest early in development. *Neurodevelopmental disorders* are "characterized by developmental deficits that produce impairments in personal, social, academic or occupational functioning" (DSM-5; APA 2013:31). They include disorders such as intellectual disability, specific learning disorders, communication disorders, attention-deficit hyperactivity disorder, and motor disorders. Comorbidity has long been recognised in children with neurodevelopmental disorders, which reflects some overlapping causes and underlying neurological abnormality (Kaplan et al., 1998).

10.1 Play Skills of Children with ASD and Other Neurodevelopmental Disorders

Multiple skills (cognitive, psychomotor, and relational) are required for playing, especially playing with peers (Perrin, 2011), and difficulties in playing are part of the core symptoms in ASD. Although many researchers describe the particularities of play amongst children with ASD, there are still misunderstandings and confusions about their actual ability to play. These children seem less playful than their peers, showing repetitive behaviours with objects, and restricted play interests (Benson et al., 2006). The way they play is characterised by certain fixations: they exhibit "preoccupations ranging from a fascination with objects to an intense focus on arcane topics" (Wolfberg et al., 2012:57).

The described behaviours may occur as a result of a range of varying overlapping difficulties. *Sensory integration dysfunctions* are frequently associated with ASD

(Rogers et al., 2003; Watling et al., 2001). Current estimates show that 45 to 96% of the children with ASD have difficulty in processing sensory stimuli (Ben-Sasson et al., 2009; Lane et al., 2010). A child's difficulty in processing and integrating sensory inputs affects participation in play activities (Schaaf & Mailloux, 2015). Over-sensitivity to noise, light, smell, or touch, also called sensory defensiveness (corresponding to a low threshold for response to stimuli), may manifest in play as avoidance of movement and restricted play preferences (Schaaf et al., 2011). On the contrary, sensory insensitivity or sensory seeking (high threshold) may manifest as reduced social interaction and difficulties in functioning or excessive movement and manipulative play in order to self-regulate the child's sensitivity level. Inattention may result from sensory-seeking behaviours, which makes the child switch from one activity to another, so that it interferes with play (Lane et al., 2010).

Children with ASD have been found to show similar motor difficulties as children with *developmental coordination disorders (DCD)* (Dewey et al., 2006; Green et al., 2009). Motor coordination difficulties, such as poor balance, eye-hand coordination, and decreased ability to plan and execute motor tasks, create social isolation and restrict participation in play (Cairney, 2015). Numerous researchers have highlighted the need to feel concerned about the consequences of impairment in motor coordination skills on children's playfulness and participation in physical play (Kennedy-Behr et al., 2013; Poulsen & Ziviani, 2004). Preschool children with coordination impairments show a lower developmental play age and engage less frequently in play than their typical peers (Kennedy-Behr et al., 2013). School-aged children with DCD avoid school playgrounds and engage less in physical and social play (Smyth & Anderson, 2000).

Children with ASD have *impaired joint attention, decreased imitation,* and *social imagination*, which are all skills necessary for symbolic play and pretend play (Jarrold, 2003). *Social interaction disturbance,* which is the core symptom in ASD, has very heavy consequences for social play (Nadel, 2002; Ten Eycke & Müller, 2015). Moreover, reduced social play of children with ASD has been linked to particularities in *cognitive and emotional development* (Jordan, 2003), while difficulties in *verbal and nonverbal communication* limit the capacity of children with ASD to engage in play with others (Wolfberg et al., 2012).

A *theory of mind impairment* is often discussed in ASD children to explain their difficulties in symbolic play (e.g., dolls, tea parties) or 'hide and seek play' that involves mental representations to imagine being another person or put oneself in a playing partner's shoes (Thommen et al., 2014). *Executive functions disorder* is also available as an explanatory theory of ASD functioning and the difficulties involved in planning series of actions to 'create' the play, be attentive, be able to change the rules of play, and even inhibit a response when they have to take turns (Thommen et al., 2014). However, due to the heterogeneity of the symptoms in ASD, it is important to avoid asserting simply that all children with ASD have the same difficulties in playing.

All these primary skills needed for a child with ASD to play have to be learnt. To do so, individual play may initially be prioritised before group play, which will later ensure the generalisation of learning. Social cognition may then become the main focus.

Different methods of *individual intervention* for children with ASD exist to develop the skills needed for play. Even though they need more structured play and external cues to develop their play skills (Tanta & Knox, 2015), the structural component of the environment might be problematic for them. When it is very controlled, as in the *Applied Behavioural Analysis* (ABA) method (Lovaas, 1987), it can lead to difficulties in the generalisation of learning (Wood et al., 2013). Other methods of intervention such as *Pivotal Response Training* (PRT) (Koegel & Kern Koegel, 2006), *Treatment and Education of Autistic and Communication Handicapped Children* (TEACCH) (Schopler, 1997), or *Early Start Denver Model* (ESDM) (Rogers & Dawson, 2010), use the most natural environment while being structured and encourage behaviour initiation in order to facilitate the generalisation of learning. These interventions are the most effective for developing play skills because they use the child's strengths and seek inner motivation through activity more than external rewards (Luckett et al., 2007). Using the specific skills of children with ASD to increase their motivation in play seems essential. Specific skills related to the characteristics of ASD, for example, the ability to perceive details or even the restricted interests of a child, could then become assets in some play situations.

Playing with others requires multiple skills, especially social skills. Through social play, children with autism learn about social interaction. Therapeutic and educational play settings should be designed to provide long-term learning processes. Before they can correctly express emotions in daily life, children with ASD need to learn to understand emotions and recognise them and their meaning. For this reason, *emotional recognition* and theory of mind are frequently taught to these children before work can begin to improve play for the sake of play (Thommen et al., 2010). Many social-cognition training programmes exist; they can be computerised (Silver, 2000 and Baron-Cohen, 2004 cited in Nader-Grosbois, 2011; Glaser et al., 2012 cited in Wood et al., 2013) or not (Howlin et al., 2010; Wellman et al., 2002). Social scenarios are also interesting tools for learning social interactions (Gray, 1994). However, in play situations, the child will be confronted with many different emotions and varied ways to express them, requiring direct application in everyday life contexts. Role-playing then seems a more appropriate tool for matching learnt social interactions to real life (Baghdadli & Brisot-Dubois, 2011).

Another way to intervene is illustrated with a study of 60 children with ASD in school integration situations, which compared interventions focussed on children with ASD versus their classmates (Kasari et al., 2012). When the intervention targeted the group of classmates, children with ASD were more often considered as members of the social network of the class than when the intervention was centred only on them. They became playing partners and were less frequently isolated during class breaks. Moreover, not only were changes observed in the attitudes of peers, but the social skills of the children with ASD also improved.

10.2 Types and Form(s) of Play Favoured by Children with ASD

According to Doody and Merz (2013), research examining the types of play favoured by children with ASD is limited. The understanding of the play preferences of children with developmental disabilities might be very challenging, particularly when they do not use the language consistently or do not have the cognitive ability for self-awareness.

Nevertheless, different features emerge when describing play among children with ASD: they often play with objects in a repetitive, restrictive, rigid, and non-symbolic manner, centred on sensorial particularities and/or on physical understanding. These features can be seen as a 'serious game' and a form of intentional play, as these children have such a thirst for knowledge. So, if we change our view on their activities, their play is rather a difference than a disability. For many children with ASD, 'banging a doll' or 'pouring sand in different containers' are activities that require directed and skilled actions and could be considered a form of play, as well as an occupation for its own sake (Spitzer, 2003). With these examples, the distinction between repetitive and not-directed behaviour is very thin. Moreover, when sensorial stimuli, which are not spontaneously part of play, are added to support the children's motivation and attention in play (e.g., multiple sound effects during the activity, lighting effects, sensory materials), this may increase the repetitiveness of their behaviours to the point of sensorial fascination and self-stimulation actions. This form of automatic behaviour may not meet the criteria for play as an intentional occupation and may lead to isolation. However, for ASD children with restricted play interests, play might be the opportunity to experience a lot of fun, to play with peers, or to join a group of children with the same concerns, for example, 'manga' or 'trains'.

Children with ASD encounter difficulties in occupying their leisure time. For them, 'free' time is often a period of stress, as they do not know what to do in such a non-structured time. A new trend of research and intervention focussing on 'how to occupy myself' in leisure is developing to improve their occupation during leisure time (Chan et al., 2014; Seward et al., 2014). In fact, the primary skills needed to occupy leisure time can be impaired in children with ASD. Children must be able to make choices between different kinds of play and to initiate behaviours with selected objects. It is, therefore, important to offer them real tools to help them deal with leisure time. As spare time is not much fun for them, it is also necessary to offer them activities they like, such as the sensory play they spontaneously choose.

We can also note that other types of play are very successful in leisure time, for instance, those related to new technologies. One of their advantages is their attractiveness (Wainer & Ingersoll, 2011; Shane & Albert, 2008). In fact, touch screens or playful interfaces are all assets that stimulate children's motivation. Moreover, the programmed, predictable, and emotionally neutral environments of new technologies are particularly appreciated by children with ASD (Shane & Albert, 2008; Ramdoss et al., 2012). "Computer-proposed tasks are clearly defined and promote the focus of

attention by reducing the distractions caused by irrelevant sensory stimuli" (Murray, 1999, in Grossard & Grynszpan, 2015:67). With such devices, children can play during their free time and also learn in a fun way, but with the risk that excessive use can lead to confinement and social isolation (Durkin, 2010; Ramdoss et al., 2012).

Robot-assisted therapy (RAT) (Diehl et al, 2012) is a large growing research area about using technology in diagnostic, play, and learning of children with ASD (Robins et al, 2012). Several types of robots have been researched. Vehicle-like robot 'Labo-1' supporting children play and using robots as social mediators in order to interact with other people (Werry et al., 2001). Humanoid-shaped robots showed the most promising results (Wainer et al., 2014). Snowman-shaped robot 'Keepon' encourages joint attention (Kozima et al., 2007). Robot 'Bandit' elicits positive social responses like speech, interactions with robot (Feil-Seifer & Matarić, 2006). Robot doll 'Robota' engages children in imitative interaction play (Robins et al., 2006). Humanoid robot KASPAR "encourages interaction between the children and copresent adults as a salient mediating object and help children to learn about tactile social behaviour" (Wainer et al., 2014).

In conclusion, the play of children with ASD is especially different from that of typical children; however, "careful observations have often come to the conclusion that many kinds of play are less affected in autistic children than was expected" (Trevarthen et al., 1998:109).

10.3 Play Environment and Participation of Children with ASD

The socio-cultural context is known to have a fundamental role in a person's ability to participate in an activity such as play (Pierce, 2001). Children with ASD may engage in play that is personally meaningful, but not socially conform and well-accepted, and most of the research on play amongst children with developmental disorders describes "deficient normative activities" or "failure to engage in expected activities" (Spitzer, 2003:72). They behave remarkably differently when part of a peer group. The participation in play amongst children with ASD reflects the core features of the condition. It is complicated by persistent socio-communication deficits in attention, imitation, and social responsiveness (Sigman & Ruskin, 1999). They inconsistently respond to peers when the latter initiate play with them (Attwood et al., 1988). They also have limited use of joint attention and other nonverbal skills, as well as marked spoken difficulties to ask for objects, request information, and share emotions, which make them unsustainable in social play (Schuler, 2003). Even when they show active interest in playing, they seem strange to typically developing children because they behave and talk in an idiosyncratic way (Boucher & Wolfberg, 2003; Jordan, 2003; Wing & Attwood, 1987; Wolfberg, 2009). This kind of social interaction is often considered undesirable, and response from peers is a negative reinforcement. In circumstances of mutual avoidance, children with ASD are at high risk of being excluded by peers or

often exclude themselves from peer interactions. Thus, the aloofness associated with children with ASD results largely from peer group responses to them (Wolfberg et al., 2012).

Indoor and outdoor free-time activities with peers, which allow children to experience enjoyment, are known to offer the best opportunities for all children to engage with their environment and have the best chance of ensuring their participation (Heah et al., 2006). Playing is essential for friendship (Theodorou & Nind, 2012). However, children with a disorder, such as ASD, spend more time in controlled and learnt activities with adults rather than with peers, which raises important psychosocial barriers, such as making friends with whom to play (Miller et al., 2010). Children with high-functioning autism experience friendship differently than typically developing children or people with another disorder. They have fewer friends, and the friends they do play with are usually peers also with a disorder. They report a lower quality of friendship with less intimacy and closeness than their typical peers (Petrina et al., 2014). Finally, research on the inner experience of participation in play for children with ASD is emerging and needs further investigation.

10.4 Conclusion

Children with ASD present sensorimotor, cognitive, and socio-emotional skills impairments that can hinder play, particularly social play. An examination of their play preferences and interventions centred on their play competence are still rare (Wolfberg et al., 2012). When professionals have to deal with the challenging behaviours and the lack of language of children with ASD, "play is more likely to be viewed as a luxury only to be targeted when more basic deficiencies have been remedied" (Wolfberg et al., 2012:59). However, play in early intervention solicits positive emotions in children and develops their interest in social interaction. Introducing play and designing appropriate play opportunities for children with ASD need to be the primary concerns for educators, clinicians, and parents.

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