

BAR-ILAN UNIVERSITY

**Characteristics of Object Play, Social Play and
Social-Pretend Play in Preschoolers with High-
Functioning ASD, in Relation to ASD Severity,
Social Disability, Chronological Age and IQ**

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Abstract

Background The development of social play with peers and the emergence of symbolic play are vital milestones in the development of young children (Boucher, 1999; Hartup, 2009; Jordan, 2003). Social play has a key role in cognitive, linguistic, emotional and social development (Fromberg & Bergen, 2015; Hay, Caplan & Nash, 2009). It allows children to develop and practice new skills (Restal & Magill-Evans, 1994), to experience social roles and to learn concepts like cooperation, turn-taking, negotiation, competition, script planning and narrative skills (Jordan, 2003). The social play is the basis of creating relationships (Howes, 1992), and it is a platform through which young children can learn about others intentions, wills and perceptions (Toth, Munson, Meltzoff & Dawson, 2006).

A parallel developmental process is the incorporation of symbolism into the social play (Howes & Tonyan, 1999). The symbolic, imaginary play, is based on children's understanding that objects can have a non-literal meaning, and their ability to share this meaning with play-partners. The social-imaginary, or social-pretend play, relies on events that do not exist in the perceptual reality, and thus the development of such play depends on the degree to which players are able to explain thoughts, ideas and assumptions to themselves and others (Smilansky and Shfatia, 1993).

An important prerequisite to the development of social pretend-play is the basic ability to engage in a non-social imaginary play, that is, symbolic play with objects (Smilansky and Shfatia, 1993). Such play enables children to experience new skills, learn relations of cause and effect, and develop a sense of being active agents in the world (Boucher, 1999; Lilard et al., 2013).

In all three domains of play that were described so far (social play, social-pretend play, and symbolic play with objects), children diagnosed with Autism Spectrum Disorder (ASD) present playing behaviors that differ from those observed in typical development both qualitatively (i.e. characteristics of play and degree of complexity) and quantitatively (i.e.

developmental delays and frequency of play) (BehlWulff, 1985; Beyer & Gammeltoft, 2000; Jordan, 2003; Wolfberg, DeWitt, Young & Nguyen, 2015). Studies of social play in low-functioning (IQ<75) ASD children show very basic forms of non-verbal communication at pre-school ages, and a very small extent of interaction initiation and emotional expression, low responsiveness and lack of spontaneity in play at school ages. Studies of high-functioning (IQ>75) ASD children show very little social communication and dialogs while playing at pre-school ages, and a small extent of initiation and responsiveness, difficulty in cooperating actions and less social play than single, isolated play at school ages (Brown & Whiten, 2000; Humphrey & Symes, 2011; Kasari, Locke, Gulsrud & Rotheram-Fuller, 2011; Sigman & Ruskin, 1999).

The literature of symbolic play in ASD children shows that without proper intervention, low-functioning children hardly develop symbolic use of objects, while high-functioning children tend to develop limited or inadequate forms of symbolic play (Baron-Cohen, 1987; Libby, Powell, Messer & Jordan, 1998; Ungerer & Sigman, 1981; Wing et al., 1977; Zercher, Hunt, Schuler & Webster, 2001). At pre-school ages behaviors such as object manipulation and organization, self-stimulation and functional play are prevalent, and at school ages, senso-motoric and functional play are more prevalent than symbolic play.

Research Objectives Previous studies of social and symbolic play in ASD children suffer from several limitations: some of them examined structured or mediated play situations, and thus did not in fact investigate free play; some of them examined narrow and specific aspects of play (e.g. communicative aspects or verbal aspects); very few of them tested pre-school ages (3-6); and the vast majority of them tested only a small number of subjects, therefore they should be considered as case-studies that lack statistical power.

In the present study we aimed to characterize spontaneous play in high-functioning pre-school children diagnosed with ASD, while engaging in a free, non-mediated interaction with peers, taking into account both social and symbolic aspects of the play. In addition, out of

interest in the individual differences among children, we investigated the relations between cognitive developmental measures and play characteristics. The study included the following four research questions:

- (1) What are the different types of children that can be characterized by the frequency and quality of their play in the domains of object play, social play, and social-pretend play?
- (2) What are the relations between these types of children and the severity of their autistic disorder (according to the Autism Diagnostic Observation Schedule); the severity of their social impairment (according to the Social Responsiveness Scale); their chronological age; and their verbal, non-verbal and general IQ?
- (3) What are the different types of children that can be characterized by the frequency and quality of play across the three domains (i.e. objects, social, and social-pretend), and how are these types related to the four cognitive developmental measures (severity of autistic disorder, severity of social impairment, age, and IQ)?
- (4) Is the type that a child belongs to in one domain (e.g. object play) related to the types the same child belongs to in the other domains (e.g. social play and social-pretend play)?

Research Hypotheses We hypothesized that different types of children would be identified based on the frequency and quality (e.g. complexity) of their play. We further hypothesized that these types would be related to the severity of autistic disorder, the severity of social impairment and the IQ, such that a child with severe autistic disorder and social impairment and low IQ would belong to a type that presents low frequency and quality of play. In contrast, we hypothesized that no relation will be found between the type that a child belongs to and his chronological age, as the development of play in ASD children usually do not match the chronological age (Jordan, 2003). Finally, since object play is a

prerequisite to the development of social play (Howes, 1980) and social-pretend play (Smilansky and Shfatia, 1993), we hypothesized that a child who belongs to a more complex type in one domain of play would belong to more complex types in the other domains as well.

Methods This study is part of a wider study which investigates an intervention program to promote social skills in pre-school, high-functioning ASD children (N=62, ages 37-69 months). The cognitive developmental measures (severity of autistic disorder, severity of social impairment, age and IQ) were collected prior to play observations. To assess play behaviors two observations were conducted: an observation of spontaneous play to assess the level of object play and social-pretend play; and an observation of joint building task (Castle Marbelworks) to assess the level of social play. The observations were recorded by video camera and encoded by two special-education professionals, who underwent pre-training with the encoding procedure. The data collected were analyzed using Cluster Analysis (Romesburg 2004) to identify types of children with different play characteristics, and Nominal Logistic Regression to test the relations between these types and the cognitive developmental measures.

Results Consistent with the research hypotheses, we were able to identify different types of children that differed in the level of complexity of play and the frequency of play behaviors. In each of the three play domains (object play, social play, and social-pretend play) we characterized three hierarchical types: In the domain of object play, the low type presented sensory play; the intermediate type presented functional play with relation to specific object properties; and the high type presented symbolic play. In the domain of social play, the low type did not present social play at all; the intermediate type presented parallel play, and sometimes parallel-aware play (parallel with social regard to the partner); and the high type presented social, reciprocal and complementary play. In the domain of social-pretend play, the low type did not present social-pretend play at all; the intermediate type

presented solitary pretend play (isolated pretend acts); and the high type presented pretend play directed to the partner, coordinated pretend acts and social exchange.

Consistent with the research hypotheses, in the domain of object play we found relations between these types and the severity of social impairment, such that the more severe the social impairment is, the more likely the child is to belong to the low type that presented low level of play. In the domains of social and social-pretend play we found no relations between the developmental measures and the types of play, which is consistent with the research hypotheses with regards to the chronological age but inconsistent with the hypotheses with regards to the severity of autistic disorder, the severity of social impairment, and the IQ.

Consistent with the research hypotheses, we found that the types of object play and social-pretend play were related, such that children that belonged to the low type of object play belonged also to the low type of social-pretend play, and vice-versa. However, no relations were found between the types in these two domains and the types in the domain of social play, which is inconsistent with the research hypotheses and could have resulted from the use of a separate observation to assess the level of social play.

Conclusions Our findings indicate inherent variance among ASD children, such that different types of children presented different levels of object play, social play and social-pretend play. These types were partially related to the cognitive developmental measures, especially to the severity of social impairment, suggesting that the development of play in ASD children critically depends on their social abilities. These findings should be generalized in future studies by the use of questionnaires instead of observations to assess the levels of play. From a clinical perspective, our results emphasize the need to develop personalized intervention programs, that should take into account the specific difficulties and characteristics of each type of children, as identified in this study.