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Symbolic Play in Children with Autism Spectrum Disorder

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Abstract The relationship between symbolic play and other domains, such as degree of autistic symptomatology, nonverbal cognitive ability, receptive language, expressive language, and social development, was investigated. The assessment files of 101 children with Autism Spectrum Disorder were studied. Nonverbal cognitive ability and expressive language were both significantly and uniquely related to symbolic play, although receptive language was not. Autistic symptomatology ceased to be significantly related to symbolic play when controlling for two or more other variables. Social development was related to symbolic play in those children with high nonverbal cognitive ability but not those with low nonverbal cognitive ability. The diagnostic and treatment implications of these results are discussed.

Keywords Autism Spectrum Disorder · Symbolic play · Functional play · Predictors of play

Introduction

The development of symbolic play skills may be explained by reference to several other domains, and therefore research in this area needs to address multiple areas of functioning. The purpose of the present study was to examine the relationship of symbolic play to symptomatology, nonverbal cognitive ability, expressive and receptive language, and social development in children with Autism Spectrum Disorder (ASD). Information on these issues will help contribute to a better understanding of how play interacts with other areas of functioning in an atypical population of children. As well, it will validate the inclusion of symbolic play measures in the diagnostic process for ASD, and may provide insight into the benefits of play training in this population. In this study, the term ''symbolic play'' will be used to refer to both traditional symbolic play according to Baron-Cohen (1987) and decontextualized functional play, consistent with the instrument employed in this study.

The play of children with ASD, if present, has been described as simple, repetitive, and stereotypical, and lacking much of the complexity and diversity that characterizes the play of children without ASD (Jarrold, Boucher, & Smith, 1993; Whyte & Owens, 1989). In an early study, Wing, Gould, Yeates, and Brierley (1977) showed that even for those children with ASD who had normal verbal and nonverbal IQs, or those who were only mildly retarded, basic play was stereotypical and relied on sensory manipulation of objects. Given that impaired symbolic play may be specific to ASD (Sigman & Ungerer, 1984), and that it is a symptom of ASD (APA, 2000), it is expected that more severe overall ASD symptomatology would be associated with lower symbolic play ability, although this has not been previously tested.

Nonverbal cognitive ability may influence symbolic play development. Normally developing infants, before they achieve a certain level of cognitive functioning, do not engage in activities that could be considered as play; as they mature cognitively, children progress

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sequentially through the stages of play (Piaget, 1962). A review by El'Konin (1999) concluded that play is very important in cognitive development, especially for the transition from the concrete to the symbolic and argued that, since changes in both play and cognitive development co-occur, the two are likely related. Gould (1986) found that scores on the Bayley Scales of Infant Development were positively correlated with ratings of play. Similarly, Baron-Cohen (1987) found that children with ASD who pretended during play had significantly higher nonverbal mental ages than those who did not. Although these findings provide strong evidence supporting the correspondence between symbolic play and cognitive development, other studies have shown that symbolic play in children with ASD is even more delayed than would be predicted from their mental age, even when compared with children with severe mental retardation (Power & Radcliffe, 1989; Riguet, Taylor, Benaroya, & Klein, 1981). Thus, while a deficit in nonverbal cognitive abilities may account for some of the play impairments seen in children with ASD, it is likely not the only factor.

Language abilities, while often overlapping greatly with nonverbal cognitive abilities, nevertheless represent a separate cognitive domain, and as such, may play a unique role in the development of play. It has been noted that language and symbolic play emerge concurrently, and that important developments in each skill emerge at similar points in the first two years of life (Spencer, 1996). Similarly, Gould (1986) noted that symbolic play is closely tied to the development of language, especially of internalized language. Udwin and Yule (1982) showed that early concept formation and symbolization in play both preceded and developed alongside verbal language, and were necessary preconditions for language development. Further, symbolic play has been related to both vocabulary use and sentence complexity in typical children (Stahmer, 1995). Several other researchers have identified strong positive correlations between either receptive language and play in typical children (e.g., Lewis & Boucher, 1988; Mundy, Sigman, Ungerer, & Sherman, 1987; Musatti, Veneziano, & Mayer, 1998; Spencer, 1996; Whyte & Owens, 1989) or expressive language and play (e.g., Lewis & Boucher, 1988; Mundy et al., 1987; Musatti et al., 1998; Spencer, 1996; Stahmer, 1995; Whyte & Owens, 1989).

There are also studies that have found a relationship between language and symbolic play in children with ASD. Baron-Cohen (1987), for example, found that Children with ASD who engaged in symbolic play had significantly higher verbal mental ages than those who did not. Sigman and Ungerer (1984) reported that while only receptive language was related to play ability in normal and mentally retarded children, both receptive and expressive language were related to the play of children with ASD.

Although most previous research has found a relationship between language and symbolic play, in an early study, Russell and Russnaik (1981) found that play and language were unrelated in typically developing children at least up to 22 months of age. These researchers suggested that the two might be related later in life when verbal socio-dramatic play develops. After reviewing several studies, Fein (1981) reported that, although certain developments in language and play appear concurrently, the relationship between the two is no longer apparent when age is controlled. It is worth pointing out that most studies reviewed in Fein's paper did not convincingly show that language is a precursor, a concomitant, or a result of play (e.g., Fein, 1979; Folger & Leonard, 1978).

Turning to the socioaffective domain and play, in Kanner's (1943) original description of ASD, social and affective impairments were cardinal to the delineation of Early Infantile Autism. Several researchers have concluded that individuals with ASD have a specific deficit in processing social stimuli, as well as storing this information in a manner that allows them to access it later (e.g., Dawson, Meltzoff, Osterling, & Rinaldi, 1998; Whyte & Owens, 1989). Play is often socially oriented (El'Konin, 1999) since it is through play that children re-enact their social and affective experiences (Göncü, Patt, & Kouba, 2002). Gould (1986) found that play age was significantly lower than language age in socially impaired children, but not in sociable children, irrespective of cognitive and linguistic ability. More recently, Stahmer (1995) showed that providing specific symbolic play training to children with ASD not only improved their symbolic play skills, but also improved their social interaction skills. Since these skills were not being targeted, the spillover in training suggests that symbolic play is related to social interaction ability.

The present study employed a within group design to determine which features of children with ASD are linked to competence in symbolic play. It was hypothesized that more advanced symbolic play skills would be related to lower autistic symptomatology, higher nonverbal cognitive ability and language ability, and better developed social skills. Given the unclear findings regarding the relation of symbolic play to expressive and receptive language in children with ASD, no specific hypotheses were offered regarding these relationships.

Method

Participants

The files of all 131 children who were diagnosed with Autism Spectrum Disorder at a major clinic for Autistic Disorder in Toronto, between March, 1982 and January, 1992 were examined for completeness. Consent had been sought at the time for using the information for research purposes and only in one instance was consent withheld. Eight files were excluded because the Lowe and Costello Symbolic Play Test had not been included in the child's assessment protocol. An additional 21 files were excluded because the children had been untestable on the Symbolic Play Test. The final sample was composed of 101 children, aged 24–216 months. This large age range was maintained in an attempt to obtain a representative sample of children with ASD, as well as to include children at all levels symbolic play development; although true symbolic play does not develop until approximately age three, early play as measured by the Lowe and Costello Symbolic Play Test is seen in younger children. There were 86 boys and 15 girls, resulting in a ratio of approximately 1 girl to every 6 boys, reflective of the sex ratio in the ASD population (Fombonne, 1999). Children represented a broad sample of the population of an entire Canadian province, with representation from all socioeconomic strata. For a complete description of the sample, see Konstantareas and Homatidis (1999). Insofar as the data were not collected for the present study, possible bias in their collection, as related to the hypotheses posed, was minimized.

Measures

Symbolic Play

The Lowe and Costello Symbolic Play Test (SPT; Lowe & Costello, 1976) is a nonverbal measure of symbolic functioning in children aged 12–36 months. The test does not require any expressive speech, and is therefore appropriate for use with all children with ASD. Children are sequentially presented with four sets of toys, and their spontaneous manipulation of the objects is observed and recorded on a standardized checklist. If the children do not spontaneously engage with the toys, neutral prompts such as, ''what can you do with these?'' were employed, following standard administration guidelines. Since norms for the SPT only provide age equivalents for raw scores of 5 (13 months) and above, and since several children obtained raw scores between 1 and 4, a conversion system was developed for this study based on evidence by Vondra and Belsky (1991). They stated that at 9–10 months, children begin to bring objects together to form meaningful relations as seen in functional-relational play, and begin to meaningfully employ objects in play. This suggests that by around 9 months, infants begin to develop the minimum skills necessary to achieve success on the SPT, the simplest items of which involve relating two common objects to each other. A score of 1 was therefore assigned a play age of 9 months, a score of 2 a play age of 10 months, a score of 3 a play age of 11 months, and a score of 4 a play age of 12 months. This gradation was employed to allow for the analysis of a larger range of play scores achieved by the children.

Autistic Symptomatology

The Childhood Autism Rating Scale (CARS; Schopler, Reichler, DeVellis, & Daly, 1980) was used to assess ASD symptomatology. Following a detailed evaluation of each symptom by means of presses, clinicians rated each child's symptomatology. Interrater reliability was collected for 44% of the children. Agreement between raters was high (r = .93).

Nonverbal Cognitive Ability

The Leiter International Performance Scale—Arthur Adaptation (Arthur, 1980) assesses pattern recognition and nonverbal manipulation. Shah and Holmes (1985) argued that as a measure of nonverbal intelligence, the Leiter is ideal for children with ASD as it requires no expressive or receptive language. In addition, the Leiter can be used with the entire age range included in this sample without necessitating a change in tools from young children to adolescents. For these reasons, it was employed in place of the more commonly used Weschler Preschool and Primary Scale of Intelligence (WPPSI; Wechsler, 2002) and Weschler Intelligence Scale for Children (WISC-R; Wechsler, 1974).

Since even the Leiter proved challenging for thirty-four of the children a second measure of nonverbal cognitive ability, the Object Permanence test, was used with them. This test measures nonverbal cognitive ability below the basal level of many other instruments, including the Leiter and the WPSSI, and thereby allows assessment of very low functioning children. The Bayley Scales of Infant Development (Bayley, 1993) were not employed as this test's norms fall short for the older very low functioning children, and hence would not have been appropriate for the children in

this sample. The Object Permanence test assesses knowledge of the constancy of objects despite apparent transformations. Children were first presented with a small object of interest, which was then hidden systematically beneath one, two, or three screens. The child's search strategies were rated from 7 to 22 months, following guidelines adapted by Urgiris and Hunt (1976). Object Permanence test scores were significantly and positively related to the Leiter in this study ($r_s = .697$, $p < .01$), validating their use in place of Leiter scores.

Verbal Ability

The Peabody Picture Vocabulary Test—Revised (PPVT-R; Dunn & Dunn, 1981) was used to assess receptive, single word vocabulary while the Reynell Developmental Language Scales (First Edition; RDLS; Reynell, 1977; Reynell & Huntley, 1985) measured receptive language and expressive language, relying on miniature objects of everyday use. This test has been frequently used to assess a child's expressive and receptive language abilities.

Social Development

The Developmental Profile II (Alpern, Boll, & Shearer, 1980) is a parent interview that assesses development across five domains, each of which is translated into a developmental age equivalent. For the purposes of this study, only the Social Development scale was used, although data on all scales were obtained for all children following test protocol. If both parents had been interviewed, the average of their responses was taken as the best estimate of the child's ability.

Procedure

All data were collected as part of the assessment process between 1982 and 1992. The assessments took place over one or two days, during which the children were assessed on each measure once. Parents were also interviewed during this time by a different clinician. All tests were administered following standard guidelines. On occasion, minor departures from standardization were necessary to elicit responses from the participants. Since it is well documented that individuals with ASD use speech and gestures more frequently when specifically prompted (Gould, 1986), this seemed necessary.

The participants' research files were systematically reviewed, and data were extracted from assessment reports and case notes, as well as from original research protocols. In one case, a child's CARS score was unclear, so one of the original clinicians involved in the assessment (MK) was consulted for clarification. For the 39 children who had undergone a reassessment, the data from the second assessment were used to maximize the number of children who were testable on the measures. Data for these children were not significantly different in age, sex, or any variable tested in this study from those for whom initial assessments were employed.

Results

Descriptive statistics (frequencies, means, and standard deviations) were calculated for chronological age, play age, nonverbal mental age, receptive single-word vocabulary age, expressive language age, receptive language age, social development age, and CARS scores and are presented in Table 1. An SPSS-10 package was employed for all analyses.

Data Analysis

A preliminary exploration of the data revealed that all of the age variables, chronological age, symbolic play, nonverbal cognitive ability, receptive single-word vocabulary, receptive language, expressive language, and social development were positively skewed. A base-10 logarithmic transformation caused all variables to approach or meet normality, according to the Kolmogorov–Smirnov test of normality. Receptive single-word vocabulary and receptive language were standardized and summed to create one receptive language score. A multiple regression analysis was

Table 1 Descriptives for chronological age, symbolic play age, autistic symptomatology, nonverbal cognitive ability, expressive language, receptive language, receptive single-word vocabulary, and social development

Measure	*N*	*M*	SD
Chronological age	101	91	43
Symbolic play age	101	22	10
Autistic symptomatology	86	39	7
Nonverbal cognitive ability	89	47	37
Verbal ability			
Expressive language	69	34	20
Receptive language	65	34	14
Receptive single-word vocabulary	57	46	27
Social development	100	35	18

Note. The above age equivalent scores for symbolic play, nonverbal cognitive ability, verbal ability, and social development are all reported in months. Autistic symptomatology scores can range from 15 to 60 when used by clinicians; a score of 30 represents the clinical cutoff for Autistic Disorder, with higher scores representing more severe symptomatology

conducted to investigate the unique contributions of each domain to symbolic play ability. Since it is well established that as children age, their play skills improve, age was included as a predictor to control for its effects. Autistic symptomatology, nonverbal cognitive ability, receptive language, expressive language, and social development were also entered, and their unique relations to symbolic play examined.

Results

The results of this study indicated that combined, chronological age, symptom severity, nonverbal mental age, expressive language, receptive language, and social development significantly predicted 56% of the variance in symbolic play, $F(6,36) = 7.705$, $p < .001$. See Table 2 for a summary of the regression results. Looking at each predictor individually, it appears that clinicians' ratings of autistic symptomatology is not a significant unique predictor of symbolic play age, after taking the other variables into account, $sr^2 = .02$, $t(36) = -1.317$, ns. A post hoc examination of this nonsignificant result through a series of partial correlations indicated that although symptomatology was significantly related to symbolic play when controlling for age and any one other variable, it ceased to be significant when controlling for age and any combination of two or more variables.

Nonverbal cognitive ability was a significant unique predictor of symbolic play, even after controlling for all other variables, and uniquely accounted for almost 14% of the variance, $sr^2 = .14$, $t(36) = 3.349$, $p < .01$. Expressive language was also a significant unique predictor of symbolic play, accounting for 6% of the variance, $sr^2 = .06$, $t(36) = 2.15$, $p < .05$. In contrast, receptive language was not significantly related to symbolic play after controlling for the other variables, $sr^2 = .03$, $t(36) = -1.695$, ns. Post hoc partial correlations did not indicate any particular pattern of significance.

Social development did not significantly predict unique variance in symbolic play, $sr^2 = .01$, $t(36) = 0.90$, ns. Exploration via post hoc partial correlations revealed that social development was significantly related to symbolic play when controlling for all variables except nonverbal mental age. Based on this finding, the sample was split into two groups on the median of their nonverbal cognitive abilities, dividing it into those children with ASD who are relatively free from mental retardation (nonverbal IQ > 66), and those who have comorbid mental retardation (nonverbal IQ < 66). Running separate partial correlations for each group revealed that social development was significantly correlated with symbolic play, after controlling for the other variables, but only in the subgroup that was relatively free of mental retardation, $r_{01.23456} = .45$, $p < .05$, one-tailed (see Fig. 1); the relation between social development and symbolic play did not approach significance in the comorbid mental retardation group, $p > .05$ (see Fig. 2).

Table 2 Multiple regression analysis with autistic symptomatology, nonverbal mental ability, expressive language, receptive language, and social development predicting symbolic play ability

Variables	B	SE B	β	sr^2
Step 1				
Chronological age	–0.034	0.127	–.042	.00
Step 2				
Chronological age	–0.175	0.131	–.216	.02
Autistic symptomatology	–0.005	0.004	–.239	.02
Nonverbal mental ability	0.258	0.077	.602	.14**
Expressive language	0.285	0.133	.462	.06*
Receptive language	–0.038	0.023	–.516	.03
Social development	0.156	0.174	.173	.01

Note. $R^2 = .56$ for Step 2.

* $p < .05$. ** $p < .01$.

Discussion

Previous studies have shown that although nonverbal cognitive ability and verbal skills are each individually positively related to symbolic play, the deficit in symbolic play seen in children with ASD often exceeds that predicted by these abilities (Power & Radcliffe, 1989; Riguet et al., 1981). The present study aimed to explore the excess in deficit by examining the association between symbolic play and several domains concurrently to assess their relative contributions. Not only did this study assess a large group of children with

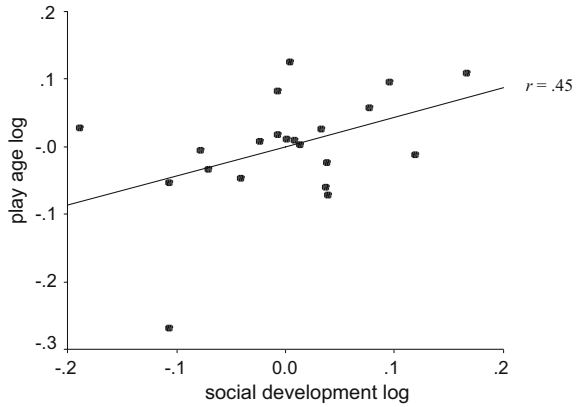

Fig. 1 Scatterplot showing the relationship between play age and social development age for high IQ children with ASD

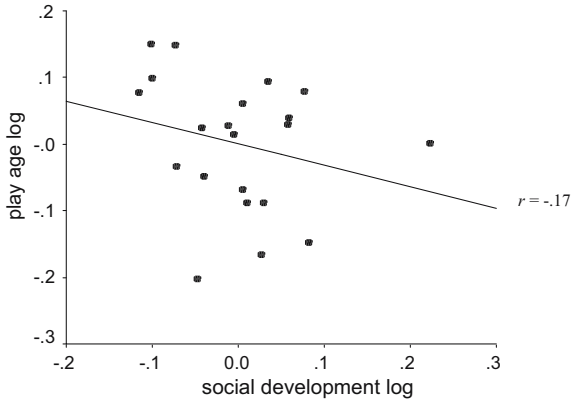

Fig. 2 Scatterplot showing the relationship between play age and social development age for low IQ children with ASD

ASD using the same test protocol so as to permit within group comparisons, it also included children with a broad spectrum of presenting characteristics, including a lower-functioning subgroup, a group many studies omit. Findings showed that symptom severity was related to symbolic play when controlling for age and any other single developmental domain; however, this relationship disappeared when controlling for more than one developmental domain. Although this finding is not exactly as predicted, it is consistent with the notion that a deficit in symbolic play is a legitimate presenting characteristic of ASD. Language ability, cognitive ability and social skills are all included in the CARS, with deficits in these three areas being associated with more severe symptomatology. That autistic symptomatology did not predict symbolic play when controlling for two or more of these areas is therefore not surprising. What is interesting is that this provides support for the notion that a deficit in symbolic play is specific to children with ASD. This pattern of results suggests that multiple symptoms of ASD as measured by the CARS, such as lower nonverbal cognitive ability, impaired expressive or receptive language functioning, or delayed social development, are required to account for the deficit in symbolic play, not simply one. This helps to account for why previous studies (e.g., Power & Radcliffe, 1989; Riguet et al., 1981) have found that the deficit in symbolic play is greater than predicted in children with ASD when solely nonverbal cognitive functioning is considered. Given that symbolic play deficits appear to be specific to ASD, including a measure of symbolic play as part of a diagnostic battery seems quite necessary. In fact, well-accepted diagnostic instruments such as the Autism Diagnostic Observation Schedule (ADOS) (Lord, Rutter, DiLavore, & Risi, 1999) do include pretend play.

As predicted, children with greater cognitive impairment showed lower symbolic play skills after controlling for the child's age, symptom severity, language ability, and social development. The very strong relationship between cognitive ability and symbolic play shown in this study is consistent with clinical knowledge and previous findings that cognitive ability is related to play skills (Baron-Cohen, 1987; Gould, 1986). This suggests that either play leads to improved cognitive functioning, that specific cognitive developments are a prerequisite to symbolic play, or that both are true. The most likely explanation may be that the relationship between symbolic play and cognitive ability is reciprocal, with development in one facilitating development in the other.

As to language and its relevance to symbolic play, only expressive language, but not receptive, was uniquely related to play age. The finding that higher expressive language ability was associated with better developed symbolic play skills is consistent with most existing evidence on children with ASD (Ungerer & Sigman, 1984; Whyte & Owens, 1989), and also on deaf children (Spencer, 1996). It may be the case that it is through expressive language that a child communicates that he/she is playing, especially symbolically. Musatti et al. (1998) outlined several ways in which play is enhanced by expressive language, such as organizing activities, communicating intent, and creating symbolic meanings. The unique proportion of variance attributable to expressive language was very small in this study, however, which may account for the discrepant findings in the existing literature. It is likely that the small effect size is a reflection of the overlap between nonverbal and verbal cognitive ability, as the two are closely related.

That receptive language was not significantly related to symbolic play, after controlling for the other variables, was unexpected since previous studies have reported that receptive vocabulary is related to symbolic play (Lewis & Boucher, 1988; Mundy et al., 1987; Riguet et al., 1981; Sigman & Ungerer, 1984; Whyte & Owens, 1989). A possible explanation for this discrepancy may lie in the differences in sample characteristics, since the present sample included children with a wide range of abilities rather than only the higher functioning subgroup. Further, this study included a measure of both single-word receptive vocabulary and verbal comprehension, while previous studies had employed only one of these measures.

Aside from methodological considerations, however, the results may genuinely reflect the low relevance of receptive language to symbolic play. Considering the large sample size of the present study,

it may be appropriate to conclude that symbolic play is more strongly related to the generative rather than the interpretive function of language. Jarrold et al. (1993) suggested that the impairment in symbolic play seen in children with ASD might be related to a difficulty in generating play ideas, a hypothesis supported by the present findings. Both symbolic play and expressive language require the child to generate or produce words or actions independently while receptive language merely requires processing of what is being said. Jarrold et al. (1993) cited research from several different domains, including memory, word fluency, and drawing, to support the view that children with ASD have difficulty generating representations that are not prompted by concrete cues. Additional research, focusing on the different aspects of language, will be needed to determine why expressive but not receptive language relates to symbolic play.

When the entire sample was considered, social development was not uniquely related to symbolic play. However, further exploration indicated that nonverbal cognitive ability appeared to moderate the relationship between social development and play. Thus, for those children with ASD whose nonverbal IQ scores were above the sample median, social development was highly positively related to symbolic play ability. This relationship was negative and did not approach significance for children with IQ scores below the sample median. It is important to note that, for this sample, the median IQ was 66, just below the clinical cut-off for mental retardation, i.e., an IQ of 70. This suggests that comorbid mental retardation may act as a moderating factor in the relationship between symbolic play and social development.

The finding that high functioning children with ASD may be qualitatively different from their lower functioning counterparts parallels other research in unrelated domains for this population. For example, among other studies, Konstantareas, Zajdeman, Homatidis, and McCabe (1988) found that maternal speech patterns differed for high and low functioning children with ASD. Similarly, it has been found that the presence of ear infections is higher in the low functioning children with ASD than it is in their high functioning peers (Konstantareas & Homatidis, 1987). This may reflect the notion that children with comorbid diagnoses may be more impaired than would be suggested based on a comparison with the two diagnoses separately; the combined impact of both conditions may be greater the sum of the two conditions. Children with ASD are impaired in their ability to acquire information, especially abstract information such as social information required for symbolic play, from their environments. Children with ASD who have comorbid mental retardation may be even less able to learn from their surroundings, possibly putting them below the threshold for learning. As such, the children in the present study appear to have been unable to acquire the minimum skills necessary to play. Thus, below a certain cognitive ability, in this case below a nonverbal IQ of 66, degree of impairment may no longer play a role in symbolic play.

The findings of this study highlight the interconnectivity of these functional domains in this group of children. It appears that the development of symbolic play in children with ASD is not tied uniquely to one area of development but is rather linked to a number of other areas of functioning. It is therefore very important that future studies consider several domains simultaneously. Taken together, these findings are in accord with a number of theoretical positions in the area, including those of inter-subjectivity (Hobson, 1989, 1990) and theory of mind (Frith, 2003). The social deficits associated with ASD may lead to limited social interactions and impairments in acquiring social information from the environment. This would hinder language acquisition, as well as the understanding of different perspectives and the development of a theory of mind, both of which are necessary to pretend while playing. In children with weak nonverbal cognitive abilities, these impairments are likely compounded, presenting a further obstacle to learning skills necessary to engage in appropriate symbolic play. This additional obstacle may lower the child's functioning to a level below the minimum required for him/her to attain symbolic play. Developmental studies would be required to test this view.

One of the implications of these findings with respect to future research is that both high and low functioning children with ASD need to be included in studies of this nature to fully appreciate the complex interactions among key areas of developmental functioning in these children. It also suggests that it is crucial to examine several domains of functioning within the same group of children since only then can relationships be revealed, particularly if the group is examined longitudinally to determine the sequential emergence of skills in children with different competence levels.

The findings of this study provide additional support for the inclusion of symbolic play measures as diagnostic tools for ASD. This study suggests that symbolic play can be used as an informative portion of the diagnostic process. Symbolic play measures are also appropriate for children with ASD, as they are generally nonthreatening, require little or no expressive or

receptive language, and are short and simple to administer. They can also provide good clinical information to the assessor, especially for a child who is untestable on more conventional standardized measures.

This study is also helpful in informing on necessary interventions with children with ASD. Given the relationships between the developmental domains addressed, it seems likely that training in symbolic play will help to improve a child's skills in other domains. As play is an activity that is typically enjoyable for most children, using it in therapy may have beneficial effects on other areas of functioning. Play also provides children with a context for developing social and language skills (Boutot, Guenther, & Crozier, 2005). Free play also encourages the use of speech and communication (Fekonja, Umek, & Kranjc, 2005). Thus, beginning with simple representational play and progressing to more complex reciprocal play may help the child acquire perspective taking which is so limited in children with ASD.

A limitation of this study is that since data were collected over a period of 10 years, from 1982 to 1992, two different versions of the DSM were employed, neither of which are identical to those currently in effect. However, the criteria for ASD have not changed drastically during this period and diagnosis in the present study relied primarily on the CARS, which provides dimensional information on level of severity and whose relevance continues to be appreciated to the present time. Another inevitable limitation is that symbolic play is achieved by 3 years of age in typical children. Many of the children in this sample were older than 36 months, and one could argue that the toy stimuli of the SPT might not have been of interest to these children. However, this would only have been an issue with the older, higher functioning children of which there were few. Even within this group of children, there was no indication that they found the toys below their interest level, as there were some high functioning children who were able to engage with the toys symbolically and competently. Despite concerns regarding the large age range, it was felt necessary to include all children to thereby obtain a more representative sample. Also, it was hoped that in using such a large age range, children at all levels of play could have been included, including those of pre-symbolic play ability to thereby address the needs of all children with ASD and not only those who are high functioning and verbal.

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