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Assessing Patterns of Social Engagement in Typically Developing Children, Children with Mental Retardation, and Children with Autism Spectrum Disorder Using a Standardized Playground Observation Checklist

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Philadelphia College of Osteopathic Medicine

School Psychology

Department of Psychology

ASSESSING PATTERNS OF SOCIAL ENGAGEMENT IN TYPICALLY
DEVELOPING CHILDREN, CHILDREN WITH MENTAL RETARDATION, AND
CHILDREN WITH AUTISM SPECTRUM DISORDER USING A STANDARDIZED
PLAYGROUND OBSERVATION CHECKLIST

by Daniel H. Ingram

Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctor of Psychology

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DEPARTMENT OF PSYCHOLOGY**

Dissertation Approval

This is to certify that the dissertation presented to us by Daniel H. Ingram on the 7th day of April, 2005, in partial fulfillment of the requirements for the degree of Doctor of Psychology, has been examined and is acceptable in both scholarship and literary quality.

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Abstract

Assessing Patterns of Social Engagement in Typically Developing Children, Children with Mental Retardation, and Children with Autism Spectrum Disorder Using a Standardized Playground Observation Checklist

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Philadelphia College of Osteopathic Medicine

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Prior research in the area of play in children suggests that children's interactions with one another can predict their social competence, their social skill development, and their ability to establish and maintain social relationships. However, most prior research has been carried out in contrived playgroups under adult direction or supervision; few studies have been carried out in naturalistic settings without adult interference. This retrospective, predictive study reviewed archival data to assess similarities and differences in playground interactions between typical children, children with mental retardation, and children with autism spectrum disorder. The study introduced a structured playground observation checklist in order to standardize playground behavior observations. Three groups of children identified as: typical (N=37), children with mental retardation (N=24), and children with autism spectrum disorder (N=20) were studied to determine similarities and differences in social competence and to assess the utility of the playground behavior checklist as part of a comprehensive assessment of autism spectrum disorder. As predicted, the use of a structured playground observation checklist accurately identified differences between and among the three groups studied.

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Chapter 1

Introduction

Statement of the Problem

Research has clearly shown that children's interactions with each other predict their social competence, their social skills development, and their ability to establish and maintain social relationships throughout their lives. The development of social competence, social schemas, and patterns of social interaction is exhibited by all people on a daily basis. This need for social interaction and social relationships is present from infancy through adulthood in typically developing humans. It is an area of development in typical children that explodes at 24 months of age, solidifies in adolescence when peer relationships dominate, and continues into adulthood when quality of life and success in life are often measured by a person's level of social competence. It has been well established that lack of social competence is the single most persistent deficit responsible for people with autism spectrum disorder's "not fitting in" with society at large.

It is clear that children with autism spectrum disorder exhibit life long difficulties in social engagement and social competence when compared with typical peers. However, how do children with autism spectrum disorder compare socially with children who exhibit developmental disabilities such as mental retardation? Are their social skills or their lack of social competence similar to or different from children who are cognitively impaired? A challenge which is key in answering these questions and in assessing and diagnosing autism spectrum disorder is to provide an environment for observation that

encourages children to exhibit typical patterns of social interaction with minimal external interference or structure. In conducting this literature review, it became apparent that most studies of social interaction in children were part of experimental or quasi-experimental studies in which manipulation of independent variables was the goal. Because of this, much of the work focusing on the social competence of elementary school-aged children, of children with autism spectrum disorder and of children with developmental disabilities has been carried out in structured settings; an alternative has been the use of teacher or parent observations to describe the child. Although studies have been available, fewer studies have been conducted in such a way that the social behaviors of children being observed were in a less supervised setting. This limits an ability to understand the true nature of social interactions of children because of the constraints that highly structured or semi-structured settings place on children. In addition, experimental and quasi-experimental observation protocols are cumbersome and impractical to use for diagnostic and assessment purposes in a functional manner. Cattenbach (1998) states that a less mechanistic (clinically controlled) view of play as imitation and preparation for adult life and more open, detailed and grounded study of children's play would add to our understanding of human social interaction.

Childhood play provides the opportunity to practice the social skills that are critical to becoming a successful person within school and society. It is within play that children practice a variety of roles, learn to read intentions of others, learn to initiate and follow others' leads, and begin to experience acceptance from others (Nelson & Smith, 1995). If play is a child's work, then the playground becomes his or her work setting. The playground thus becomes a useful research site because recess is one of the few occasions

when children are in an environment relatively free of adult control and where their play and social relations are generally their own.

Purpose of the Study

The purpose of this study is threefold: 1) to review archival data for the purpose of gathering data relative to typically developing children, to children with moderate mental retardation, and to children with autism spectrum disorder; the observation area is a playground situation without adult interference to assess their patterns of social interaction, 2) to determine if differences in patterns of social engagement exist between typically developing children, children with moderate mental retardation and children with autism spectrum disorder during a 15 minute playground observation, and 3) to assess patterns of social engagement and social interaction in the three groups being studied for the purpose of improving assessment practices and intervention programs. In order to provide a structured framework for meeting the stated goals, an operationally defined playground observation format will be used to examine similarities and differences in playground behavior.

Research Questions

1. How do children with autism spectrum disorder perform on the playground observation checklist?
2. How do children with autism spectrum disorder perform on the playground observation checklist relative to typical aged-matched peers?

3. How do children with autism spectrum disorder perform on the playground observation checklist relative to children with mental retardation and no diagnosis of autism spectrum disorder?
4. To what degree does the playground observation checklist differentiate between typically developing children and children with mental retardation?
5. What are the similarities and differences between children with autism spectrum disorder, children with mental retardation, and typically developing children on playground observation scores?
6. To what extent do playground observation scores differ by age, gender, parent occupation, or IQ?

Specific Hypotheses

Hypothesis I: It is predicted there will be a difference in overall rating scores between typical children, children with mental retardation, and children with autism spectrum disorder during a structured 15 minute playground observation as measured by levels of social interaction and social competence, using a structured playground observation format.

Hypothesis II: It is predicted that typically developing children and children with mental retardation will exhibit similarities in social competence and social interactions in playground interactions, but children with autism spectrum disorder will exhibit significant differences in playground interactions from typically developing children and children with mental retardation.

Hypothesis III: It is predicted that age, gender, IQ, and parent occupation will influence performance on the Playground Observation Checklist.

Literature Review

Leo Kanner, who first described autism in 1943, published a series of descriptions about children seen in his clinic who exhibited a number of peculiar behaviors; the one common behavior, however, was a lack of interest in people around them. They also interacted and reacted peculiarly to the world around them. Their self-absorption and inability to take the perspectives of others was a common thread that ran through the behavior of all these children with autism.

Autism spectrum disorder is a developmental disorder that affects all aspects of how persons view their world and how they learn from their experiences. People with autism spectrum disorder generally lack the desire or need for contact with others. The attention to and approval of others is generally not important to persons with autism spectrum disorder. However, emphasis must be placed on the fact that both social contact and lack of desire for social reciprocal interaction is not an absolute lack of desire for affiliation; rather, it is a relative one. Individuals with autism spectrum disorder can and often do seek out contact with others, display affection, and establish reciprocal social interactions that are generally on their terms and topics.

According to the Diagnostic and Statistical Manual of Mental Disorders-Fourth Edition Text Revision (APA, 2000), approximately 650 to 1,000 of 10,000 children are born with autism spectrum disorder. Autism affects boys four to five times as often as it affects girls, and Asperger's syndrome (another type of Pervasive Developmental

Disorder) may affect boys up to ten times as often as girls. In addition to genetic factors, autism spectrum disorder is linked with other neurobiological disorders e.g., Phenylketonuria, William's Syndrome, Fragile X, and certain types of seizure disorders).

The concept of social development and the lack of need for social reciprocal interaction are the most pervasive and the most debilitating aspects of autism spectrum disorder. In people with autism spectrum disorder, both the levels of interest in others and the levels of attachment to others are not always absent but they are very different in the quality of expression. This is more evident in children with high functioning autism and Asperger's syndrome. Their interest in others is often self-serving and they often do not consider the interests, feelings, or reactions of another person. High functioning children with autism and children with Asperger's syndrome are often willing to relate to others but are unsure of how to initiate or maintain reciprocal social interactions (Siegal, 1996).

An additional feature of autism spectrum disorder that makes treatment very difficult is the "theory of mind" concept. Baron-Cohen (1997) describes theory of mind as the understanding that an individual has about other peoples' thoughts and beliefs; i.e., that others have minds capable of thinking or believing something different from him or her. Because of this, people with autism have difficulty comprehending the thoughts and behaviors of others, particularly as related to their own behaviors and responses. They have difficulty interpreting (verbally and non-verbally) the intents of others. This deficiency in theory of mind also makes self-introspection difficult relative to examining their own thoughts or ideas as they relate to their own behaviors. In other words, people with autism spectrum disorder live in a black and white, here and now world to which

they respond in a predictable, rigid, and ritualistic way. Because of this, they are often extremely rule-governed and are most comfortable remaining in a predictable, rule-based world predicated upon their own perceptions and needs. This rigid and inflexible rule-based paradigm often serves to further alienate, isolate, and frustrate persons with autism spectrum disorder in their day-to-day interactions (Baron-Cohen, 1997).

Social Competence and Social Interactions

Social competence is a central organizing theme for human development and it is essential for life in most people. Humans enter a social world at birth and make their way through the world by successfully negotiating decades of social exchange (Odom, McConnell, & McEvoy, 1992). Participation in the social world requires that individuals acquire at least a minimal level of competence in social interactions (Odom, McConnell, & McEvoy, 1992). Social competence refers to the strategies and skills that allow individuals to have meaningful friendships, to forge and to close, emotion-based relationships, to collaborate productively with groups and work partners, to manage public social settings, and to participate in family functions (Gutstein & Whitney, 2002). Most definitions of social competence include elements of child effectiveness in influencing a peer, in social interactions, and in appropriate behavior given a specific setting, context, or culture (Guralnick, 1990).

Measures of social competence may reveal the absence of skills necessary to interact with peers, as well as overt behaviors that alienate peers or discourage interactions (Odom, McConnell, & McEvoy, 1992). Thus, based on the above definitions and

parameters, a conclusion can be drawn that social competence is necessary for individuals to grow and to develop. The concept of social competence is grounded in the specific acts of social behavior and social interaction. This has been noted in children particularly during peer interactions. Social behaviors are the building blocks of social interactions, and social interaction is the foundation upon which social competence is based (Odom, McConnell, & McEvoy, 1992). In fact, the inability to develop social competence is the leading factor responsible for most adults with autism spectrum disorder failing to attain even a minimum level of quality in their lives (Howlin & Goode, 2000). Social competence has been repeatedly demonstrated as a critical variable in predicting success in future life (Denhem, 2001).

In fact, academic success rests on a foundation of social-emotional competencies that must be nurtured as part of mainstream education (Elias, Zins, Graczyk, & Weissburg, 2003). The concept of developing social competence is so meaningful and so critical to success in later life that school-wide programs have been developed for use in school systems. Effective social and emotional learning begins at an early age and continues through high school (Collaborative for Social, Academic, and Emotional Learning: CASEL, 2003). There are 5 core social and emotional competencies in students, based on the CASEL recommendations:

- Self-Awareness: Knowing what we are feeling in the moment
- Social-Awareness: Understanding what others are feeling
- Self-Management: Handling our emotions so they facilitate rather than interfere with the task at hand
- Relationship Skills: Handling emotions in relationships effectively

- Responsible Decision Making: Making decisions based on all relevant factors, including the likely consequences of alternative courses of

one's actions, yet respecting others and taking responsibility for one's decisions.

As one can easily determine, children with autism spectrum disorder have limited ability to develop these core social and emotional competencies and to participate effectively in a school-wide program such as this would be very limited. Although the five competencies suggested for developing social and emotional learning are certainly relevant, there are numerous factors that impede children with autism spectrum disorder from developing and using these competencies throughout their lives. Thus many children with autism spectrum disorder are relegated to a life of social anxiety, social avoidance, and social isolation.

Social Competence and Social Interaction in Children with Autism Spectrum Disorder

The presence of social impairments and the lack of social competence are exhibited very early in the development of children with autism spectrum disorder (Lord, Storoschuk, Rutter, & Pickles, 1993). This is evident in children even below two years of age. Children with developmental disabilities exhibit, with peers, interaction skills that are qualitatively different from the peer interaction skills of typically developing children (Odom, McConnell, & McEvoy, 1992). The major feature of autism spectrum disorder is the severe and pervasive deficit in social behavior and social reciprocity. This deficit in social behavior is evident to parents at a very early age and assists diagnosticians in assessing the presence of autism spectrum disorder in young children. Young, Brewer,

and Pattison (2003) conducted a study to determine if parents could identify behavioral abnormalities in children who were later identified with autism spectrum disorder. The parents were asked to identify areas of development that first concerned them. The core deficit areas identified by the parents were: 1) gross motor difficulties 2) social awareness and play deficits 3) language and communication difficulties and 4) unusual preoccupations. It was concluded that all of the above deficits affect the development of social competence and social interactions.

The presence of difficulties in social competence and social interaction in children with autism spectrum disorder is also evident in settings outside the home. Pre-school special education teachers have reported that 75% of the children in their classrooms have difficulties in the acquisition of peer related social competence and social interactions (Odom, McConnell, & Chandler, 1990). Schreibman, Koegel, and Koegel (1996) report that children with autism spectrum disorder do not typically interact with other children, do not seek social involvement with toys, and generally prefer to be alone. They rarely, if ever, spontaneously initiate or seek interactions from others and may react to the social overtures from others by attempting to escape or avoid the situation. It can be concluded that social deficits emerge early and are pervasive in all children with autism spectrum disorder.

These deficits in social behaviors are also evident as the child grows older. They continue to be the “loners,” often ignoring other children and engaging in solitary activities. Gutstein and Whitney (2002) reviewed numerous research studies on children with autism spectrum disorder and found that many children with the disorder move into adolescence and young adulthood without social competence. Rutter (1978) reported that

the same profound deficits found in children with autism have also been found in adults and in higher functioning autistic individuals; they have minimal or no retardation and a relatively mild degree of psychopathology. These individuals usually have little or no interest in establishing friendships, lack responsiveness to the subtle social cues so important in the acquisition of normal social behavior, and continue to be loners. These adults remain socially isolated, say or do socially inappropriate things and are often seen by others as eccentric or perhaps somewhat bizarre.

Friendships and good social relations are vital to the ultimate functioning of people with autism spectrum disorder (Strain & Hoyson, 2000). According to Strain and Schwartz (2001), there are four primary functions of social relationships. First, they serve a natural support function that provides a source of support in order to accomplish tasks, they gain entry into social groups, and establish other networks of social support. Second, social relationships and friendships serve an informational or social learning function. In this way, individuals learn about social conventions (social appropriateness) and acceptable conduct through interactions and feedback from others. Third, social relationships and friendships serve an advocacy function. This advocacy occurs often in the form of behaviors and statements that lead to positive self-worth and enhancement of self-esteem. Finally, social relationships and friendships serve an affirming function during which the person gains a sense of self-competence, of belonging and support, all of which seems to yield a level of behavioral competency that sets the stage for later success in life. However, people with autism spectrum disorder do not generally develop these essential building blocks for achieving a quality of life (Strain, 1991). The absence of good social relations early in life appears to set into motion a downward spiral of

events that culminates in such poor adult outcomes as: (1) decreased likelihood of employment, (2) decreased likelihood of independent living, (3) decreased life expectancy, and (4) severe mental health problems (Strain, 1991). It is only the very sophisticated and perhaps the lucky person with autism spectrum disorder that escapes this described, unfulfilling fate.

In summary, social competence in peer interactions is an organizing theme for social development throughout the life span of people with autism spectrum disorder. The development of social competence is greatly influenced by early and ongoing interactions with parents, peers, and professionals. The development of social competence contributes uniquely to many different domains within the life of a person with autism spectrum disorder. It also has ongoing implications for social functioning, vocational success, and independent living in adolescence and in adulthood. The research indicates that people with autism spectrum disorder experience difficulties in acquiring and generalizing the skills necessary for interacting with others in a competent and positive manner. Many children with autism spectrum disorder, particularly those who are high functioning and those with Asperger's syndrome, desperately want to fit in with peer groups but they lack the social skills and social knowledge (social competence) to do it (Church, Alisanski, & Ananullah, 2000).

Comparing Social Competence and Social Interaction in Children with Autism Spectrum Disorder to Typical Children and Children with Developmental Disabilities

It is clear that children and adults with autism spectrum disorder experience and exhibit life long difficulty in the development, acquisition, and generalization of social competence, in social interactions, and in establishing and maintaining social relationships. However, how do children with autism spectrum disorder compare socially with their typical peers or with children who exhibit other developmental disabilities, such as mental retardation? Are their poorly developed social interactions or their lack of social competence similar to or different from children who are cognitively impaired?

A synthesis of research supports the fact that although social competence and social abilities were highly variable, these remained the greatest life challenges for children with autism spectrum disorder (Church, Alisanski, & Annullah, 2000). When comparing children with autism spectrum disorder and typical children, a pattern both of similarities and of differences emerges. However, the differences exceed the similarities between the two groups. According to Gutstein and Whitney (2002) children with autism spectrum disorder seem to develop secure attachments just as do their typical counterparts.

Gutstein and Whitney (2002) also report that children with autism spectrum disorder are able to differentiate between their mothers and strangers. In addition, children with autism spectrum disorder display evidence of attachment behaviors, especially upon separation and reunion (Capps, Sigman, & Mundy, 1998). Another similarity between typical children and children with autism spectrum disorder involves the ability to develop instrumental interactions. Instrumental interactions are those that involve finding a way to control or manipulate interactions in order to have a want or desire met or to achieve some other desired outcome. Travis and Sigman (1998) report that children with autism spectrum disorder make the same number of requests of adults as do their

typical counterparts and make as many initiations to adult as do matched controls. They use gestures designed for instrumental goals as much as typical children (Capps, Sigman & Mundy 1998) and they communicate to regulate adults' behavior to achieve an environmental end (Weatherby & Prutting, 1984). It was also determined that children with autism spectrum disorder use a typical amount of eye contact and gestures with a social partner to request aid in obtaining an object or event (McEvoy, Rogers, & Pennington, 1993; Mundy & Crowson, 1997). It is quite interesting to note that all of the above similarities occurred when interacting with adults and all involved meeting a need or desire that was important to the child with autism spectrum disorder. In actuality, the interaction often does not involve social reciprocal engagement, sustained social interaction, or social competence in any manner, but serves only to meet a specific need important to the child and it is generally adult, rather than peer, directed. Thus, although similarities between children with autism spectrum disorder do exist relative to their typical peers, they are generally self-directed and self-fulfilling in nature.

In contrast to the reported similarities between typical children and children with autism spectrum disorder, there are many differences, particularly in the realm of social competence and social interactions. A consensus seems to emerge in the literature that people with autism spectrum disorder spend a lifetime without the experience of sharing a relationship or enjoyment with others due to their lack of affective engagement and inability to relate to others. According to Hobson (1993), children with autism spectrum disorder "do not fully understand what it means for people to share and coordinate their experiences" (p. 5). Trevarthen, Aiken, Papoudi, and Roberts (1996) describe people with autism spectrum disorder as impaired both in their emotional and collaborative

responses. This impairment begins very early in the life of typical people but never really develops or comes to fruition in people with autism spectrum disorder. In fact, experience sharing is evident in typical development at 12 months of age (Osterling & Dawson, 1994). Often by the end of the second year of life, toddlers with autism spectrum disorder may have already moved into deviant pathways of social and emotional development from which they may never recover (Robertson, Tanguay, L'Ecuyer, Sims, & Waltrip, 1999; VanMeter, Fein, Morris, Waterhouse, & Allen, 1997). This is in stark contrast to their typical peers- who by the second year of life are exhibiting an explosion of reciprocal language development, an egocentric personality structure, and a plethora of social seeking behaviors and event sharing experiences.

Sharing enjoyment and enthusiasm is another area in which mothers perceive young children with autism as significantly less emotionally engaged and less expressive than typical peers (Wimpory, Hobson, Williams, & Nash, 2000). Lord et al. (1993) found that all of the behaviors that best discriminated young children with autism spectrum disorder from their typical counterparts involved the sharing of positive emotions such as greeting, seeking to share enjoyment of an event, and responding to others' indications of pleasure. Young, school-aged children with autism spectrum disorder extend fewer social invitations than typically developing peers, but when they do initiate interactions with peers, the function of the initiation is primarily about giving information (instrumental interactions) to gain something important to them (Gutstein & Whitney, 2002). In contrast, initiations of matched controls are related to inviting others to play and to seek personal information or to experience sharing (Hauck, Fein, Waterhouse, & Feinstein, 1995).

In regard to social coordination of actions and events, children with autism spectrum disorder do much less monitoring and observing of peer behaviors in a classroom setting than do their typical peers (Hauck, Fein, Waterhouse, & Feinstein, 1995). A number of studies of social coordination reported, in particular, a severe deficit in emotional coordination. These studies show poor coordination of emotional responses that are in sync with their partners. For example, children with autism spectrum disorder are less likely than typical children to produce smiles in response to smiles from their mothers (Charman, Swettenham, Baron-Cohen, Cox, Baird & Drew, 1997). Preschoolers with autism spectrum disorder display happy, sad, angry, and neutral facial expressions at a frequency similar to age-matched peers, but they are more likely to make these displays during contextually incongruent situations. Children with autism spectrum disorder, unlike their age-matched peers, are less engaged with and less affected by other people's expressions of feelings (Hobson, 1993). Furthermore, Hobson (1993) reports that, unlike matched controls, they do not use feelings to differentiate people from one another. In studying adolescents, Bauminger and Kasari (2000) found that when teenagers with autism spectrum disorder did make friendships, they were without feelings of alliance or companionship that characterized typical friendships established by age matched peers.

In the area of reciprocal social communication, there are numerous differences between children and adolescents with autism spectrum disorder and typical peers. Landa (2000) reported that adolescents and adults with autism spectrum disorder seem oblivious to the lack of coordination in conversations and do not monitor their communication to ensure that it is correctly understood. They do not attempt to repair communication; they do not work to ensure the fact that they receive others' messages

accurately; they make no attempt to aid the listener when he or she communicates confusion; and they do not regulate their conversations to ensure that topics of interest match those of their social partners.

Minor (2003), examined the functional play of 76 children with autism spectrum disorder, determining that their play does not follow the same developmental progression as does that of typically developing children. Specifically, children with autism spectrum disorder produced few examples of other-directed acts and substitution acts. Overall, compared with typical children matched on mental age, children with autism spectrum disorder produced fewer examples of play and showed delayed emergence of play skills.

Comparisons of the development of social competence between typical children and children with autism spectrum disorder show few similarities and many differences. Clearly, compared with their typical counterparts, the ability to exhibit social competence in their socialization encounters is delayed and impaired from early toddler years through adulthood.

An additional area of interest and research involves comparisons between children with autism spectrum disorder and children with other developmental disabilities such as mental retardation. Does the same pattern of social competence emerge when comparing children with autism spectrum disorder and children with moderate mental retardation? Wing (1991), who conducted a study comparing these two groups of children states, “whereas social interactions for mentally retarded children were appropriate for their developmental levels and mental age, the social interactions for children with autism spectrum disorder were inappropriate for any mental age” (p. 113). Wing (1991) further reports that inappropriate social interaction displayed by children with autism spectrum

disorder was virtually always associated with impairment of two-way social communication affecting non-verbal communication as much as or more than verbal communication. Their inappropriate social interaction often appeared as aloofness or indifference to others or as passive acceptance of approaches from others; they showed little or no spontaneous social activity. When children with autism spectrum disorder exhibited active response patterns, the patterns of interaction were odd, one-sided, repetitive, and appeared egocentric. This is in contrast to children with mental retardation who were engaging, spontaneous and conversationally reciprocal at a level consistent with their developmental levels and mental ages.

Hobson and Lee (1998) videotaped 24 children, adolescents and young adults with autism spectrum disorder who were individually matched for chronological age and verbal mental age with 24 non-autistic persons with mental retardation. The purpose of their study was to examine greetings and farewells, some spontaneous and some prompted, toward an unfamiliar adult. The finding reported that compared with control subjects with mental retardation, those with autism spectrum disorder were less likely to offer spontaneous verbal and non-verbal gestures of greeting and farewell and were less likely to establish eye contact even when they were offered a greeting. There were also few subjects with autism spectrum disorder who smiled or waved good-bye. It was interesting to note that even when the subjects with autism spectrum disorder greeted or said farewell to the examiners, the raters “did not feel the subjects with autism spectrum disorder engaged them during the greeting episode and more than half were judged to have engaged hardly at all” (p.124). Thus, even when children with autism spectrum disorder exhibited the act of saying hello or good-bye, their engagement with the raters

seemed rote and perfunctory. This is in contrast to the mentally retarded control group who, in addition to the hello and good-bye greetings, also established a feeling of interpersonal engagement.

Finally, it was also determined that cognitive ability often played a significant role in differentiating autism spectrum disorder from other groups. A study (Baron-Cohen, 1989) comparing Theory of Mind abilities in individuals with autism spectrum disorder, mental retardation and normal development was reviewed. Results indicated that individuals with autism spectrum disorder, as well as individuals with mental retardation have impaired theory of mind abilities. In addition, the chronological and verbal mental age of normally developing children and the chronological age, verbal mental age, and performance mental age in subjects with mental retardation and autism spectrum disorder were also important moderator variables.

In conclusion, it is quite apparent that social competence and social interactions are consistently different in people with autism spectrum disorder when they are compared with typically developing children and children with developmental disabilities. In every instance, lack of social competence is a differentiator throughout the life span of people with autism spectrum disorder. It is apparent that social deficits consistently set apart people with autism spectrum disorder from every other group. However, there was no support in any study cited nor was any support located during the course of this literature review to indicate that gender or ethnic group representation made a difference in the development or expression of the core social deficits or lack of social competence in people with autism spectrum disorder. It has been reported in a few studies cited that age and IQ affects the expressions of behaviors associated with autism spectrum disorder.

However, IQ or mental age did not negate the core social deficits associated with autism spectrum disorder.

Mental Retardation and Social Development

Mental retardation, at present, is arbitrarily defined along the continuum of intellectual abilities, but its definition and defining criteria are quite variable and dependent upon the diagnostic source. Esquirol, in 1845, is credited as being the first medical writer to have defined *idiocy* as a disorder in which mental faculties fail to develop (King & States, 1998). This initial attempt at pairing intellectual abilities and mental retardation allowed clinicians to diagnose mental retardation differentially from dementia. This differentiation between intellectual abilities and dementia is retained in today's diagnosis of mental retardation. Functional impairment in adaptive living has universally been an additional defining criterion for the diagnosis of mental retardation. In fact, early legal standards defining mental retardation included functional skills such as the ability to count to 20 pence, measure a yard of cloth, tell one's age, name one's parents, or name the days of the week (Swineburne, 1975). Today's measurement of functional disability is determined using standardized tests such as the Vineland Adaptive Behavior Scale (1984) or the American Association of Mental Retardation Adaptive Behavior Checklist (1993). The Vineland measures domains such as communication, daily living skills, motor skills, and socialization. The Vineland calculates a global score that represents global adaptive functioning compared with a standardized group for a specific chronological age. However, the primary standard of below average intellectual

functioning must initially be met to satisfy the criteria for a diagnosis of mental retardation. According to the Diagnostic and Statistical Manual-Fourth Edition-Text Revision (DSM-IV-TR; APA, 2000), the essential feature of mental retardation is significantly sub-average general intellectual functioning that is accompanied by significant limitations in adaptive functioning in at least two of the following skill areas: communication, self-care, home-living, social/interpersonal skills, use of community resources, self-direction, functional academics, work, leisure, health, and safety skills. The onset must occur before 18 years of age.

Mental retardation has many different causes and is often the final common outcome of various pathological processes that affect the functioning of the central nervous system. These neuropathological pathways encompass chromosomal disorders e.g. Down syndrome, Fragile-X syndrome, endocrine disorders e.g. tuberous sclerosis, or environmental etiological factors e.g. lead ingestion and fetal alcohol syndrome. There are numerous pathways that lead to a final outcome of mental retardation.

There are four traditional categories associated with mental retardation. Standardized scales of intelligence such as the Wechsler Scales or the Stanford-Binet Scales are widely used to determine IQ and delineate the appropriate level of mental retardation. The four specific levels of mental retardation based on DSM-IV-TR criteria are: Mild mental retardation IQ level 55-70; Moderate mental retardation IQ level 35-55; Severe mental retardation IQ level 20-35; and Profound mental retardation IQ level below 20. There is also a diagnostic category called Mental retardation - Severity Unspecified.

Mental retardation affects approximately 1-2% of the population in developed countries (King & States, 1998). It is generally assumed that as the severity of the

mental retardation increases so does the probability of an organic cause. However, people diagnosed with mild mental retardation during their school years often successfully integrate into society at large, functioning well enough that they may no longer meet the criteria for mental retardation. It can also be assumed that people diagnosed with moderate or low mental retardation will generally require ongoing support and monitoring from parents or caregivers throughout their lives.

A diagnosis of mental retardation does not ameliorate the possibility of developing a comorbid mental illness. The methods for identifying mental disorders and generalizing from particular samples affect prevalence estimates that range from 10-70% (King & States, 1998). However, the challenge of diagnosing mental illness in those with sub-average intellectual ability is very difficult. Because most mental illness diagnoses are based on the ability of the individual to describe thoughts, feelings and ideas, it is very difficult to establish a comorbid mental illness in children with mental retardation. Thus a mental illness diagnosis in children with mental retardation is often based on outside observations and reports from others. For example, how does depression or anxiety present itself in the absence of the person's verbal ability to convey his or her feelings subjectively? Because of this difficulty, a developmental approach to the diagnosis of mental disorders is essential. When diagnosing a comorbid mental illness, it is essential that a mental age or developmental age be established and then specific mental illness criteria can be applied. This is particularly true when the diagnosis of a Pervasive Developmental Disorder such as autism is present. Because many individuals with severe and profound mental retardation have overlapping symptoms with autism (communication impairment, difficulty with social relationships, and perseverative

stereotypical behaviors), it is essential to establish a developmental age and then determine if a qualitative impairment exists relative to the assessed developmental levels.

In children with mental retardation, delayed social development is common. Although cognitive limitations may explain some of these delays, children with mental retardation vary greatly in their social skills development due to a variety of factors. For example, environmental conditions and socioeconomic status are often prime factors in the level of social skills displayed by children with mental retardation. In addition, etiology (e.g., Down Syndrome, Fragile-X Syndrome) often causes differences in the acquisition of social skills and in the manner in which they are displayed, even though both conditions are linked to mental retardation. A study conducted by Kasari and Sigman (1993) compared children who are both autistic and mentally retarded with children who have Down syndrome and found that children with Down syndrome more often look at others and initiate interactions even when cognitive abilities are equivalent. However, when compared with children who are typically developing, children with mental retardation are less proficient in recognizing emotions, in responding to others emotions, and in prosocial behavior (Kasari & Bauminger, 1998). There are, however, social similarities between typically developing children and children with mental retardation. Kasari, Mundy, Yurmiya, and Sigman (1990) found that preschool children with Down syndrome displayed similar amounts of smiling when compared with mental-aged matched typical children, but there were qualitative differences noted. In particular, Kasari et al. (1990) found that children with Down syndrome exhibited slighter smiles, smiles not involving the entire face, and smiles that were briefer in duration.

Another area of emotional development concerns emotional responsiveness which involves the ability to share affect with others; i.e. the ability to integrate both affect and interaction. Children can display positive affect while engaged with others, but one child may be looking at the person and smiling (joint attention) and the other may be smiling but looking away from the other person (unilateral disregard). This ability to share affect while looking at someone and smiling is a characteristic that differentiates children with autism spectrum disorder from typically developing children and children with mental retardation (Dawson, Hill, Spencer, Galpert, & Watson, 1990). A number of studies found that children with mental retardation look at faces for a longer period of time than they looked at objects or events (Kasari, Mundy, Mundy, Yirmiya, & Sigman, 1990; Kasari, Freeman, Mundy, & Sigman, 1995; Ruskin, Kasari, Mundy, & Sigman, 1994). The above studies confirm that children with mental retardation exhibit joint attention skills; therefore, they are generally perceived to be more connected and sociable than children with autism spectrum disorder. This innate ability to look at and engage others naturally suggests a willingness to become part of an ongoing social interaction.

Prosocial behaviors consist of sharing behaviors that reflect one's awareness of and concern for others. These behaviors can typically be seen in children as young as 18-24 months of age; they have been observed as having the ability to exhibit care giving behaviors directed to others in distress (Zahn-Waxler, Radke-Yarrow, & Wagner, 1992). The children in these studies comforted, hugged, or in other ways acknowledged the distress of others. Sigman, Kasari, Kwon, and Yiumiya (1992) examined preschool aged children's reaction when they saw their mother hurt her finger with a pounding toy.

This study showed that children with mental retardation both paid attention to and showed concern for their mother's painful distress.

Overall, the social and emotional development of children with mental retardation differs qualitatively from typically developing children. However, the acquisition of social skills follows a similar path when compared to typical age matched peers who are (?) functional and well established. Thus, children with mental retardation generally exhibit empathy, joint attention, prosocial behaviors, and emotional concern, but at a delayed rate of acquisition.

Instruments Used to Assess and Diagnose Autism Spectrum Disorder

Assessment of a child with autism spectrum disorder requires an experienced examiner who fully understands and is quite knowledgeable about the characteristics of the disorder (e.g., qualitative impairments in social interaction, reciprocal communication and stereotypical ritualistic behavior). There are also additional domains that must be assessed (e.g., cognitive, pragmatic language, adaptive behavior, etc.); these can influence how the characteristics of autism spectrum disorder are exhibited. Because of this and because of the complexity and variability of behaviors across settings, a complete and comprehensive assessment across multiple domains must be conducted. In addition, it is imperative that data and information be collected in conjunction with other educational specialists such as teachers, speech-language pathologists, and occupational therapists. All evaluations for autism should include assessment in the core domains of

social competence, communication (verbal, nonverbal and pragmatics), behavior variability, and environmental influences (Shriver, Allen, & Matthews, 1999).

There are three primary methods for obtaining data across the core domains. Observation of student behavior, both formally and informally, plays a key role in the assessment process because behavior variability is often the most striking difference reported by parents, educators, and specialists. Both direct observations of the child (classroom, lunch, recess) and indirect observations (parent and teacher reports) are accepted methods of gathering information. In addition, verbal reports through structured interviews with parents and caregivers and structured interviews with the child should be components of a comprehensive assessment process.

The following are presented as a partial sample of the various instruments available to assist the examiner in completing a comprehensive assessment:

Observation Instruments:

-Autism Screening Instrument for Educational Planning (ASIEP) (Krug, Arich, & Almond, 1993) - an observational protocol with 5 standardized subtests involving direct observation and clinical interviews.

-Childhood Autism Rating Scale (CARS) - (Schopler, Reichler, & Renner, 1988) - an indirect observation protocol involving 15 items rated on a 4-point scale during which the child's behavior is rated from normal to severe autism.

-Autism Diagnostic Observation Schedule-WPS (ADOS-WPS) (Lord, Rutter & LeCoteur, 1994) – an interactive observation format during which the examiners interact with the child while using a standardized algorithm-scoring format. This instrument is considered the “gold standard” for autism diagnosis in research.

-Autism Diagnostic Interview-Revised (ADI-R) (Lord, Rutter, & LeCoteur, 1994) - a semi-structured interview for caregivers based on ICDM & DSM-IV criteria.

-Gilliam Autism Rating Scale (GARS) (Gilliam, 1995) - a behavior rating form completed by a parent or teacher to be used as a screening device or as part of a comprehensive assessment.

-Autism Behavior Checklist (ASIEP) (Krug, Arick, & Almond, 1993) - the 4th section of the ASIEP and is a behavior rating form completed by the parent or teacher.

-Autism Diagnostic Rating Schedule (ADOS) (Lord, Rutter, & LeCoteur, 1994) - a direct interaction assessment instrument that provides opportunities to observe and assess communication patterns, social-reciprocal interactions and stereotypical play patterns. This instrument requires a high level of training and practice to administer.

-Psychoeducational Profile-Revised (PEP-R) (Schopler, Reichler, Bashford, Lansing, & Marcus, 1990) - a diagnostic instrument during which the examiner interacts directly with the child. The instrument provides information on developmental functioning in Imitation, Fine Motor, Gross Motor, Eye-Hand Integration, Cognitive Performance and Cognitive-Verbal areas.

Effective and comprehensive assessment of a child for the purpose of diagnosing autism spectrum disorder requires the clinical examiner to be knowledgeable not only about the characteristics of the disorder, but also about the unique response patterns exhibited by each individual. In addition, a thorough working knowledge of a wide range of direct and indirect observations, interaction, and interview instruments is essential to ensure diagnostic accuracy. By combining these requisite skills, the clinician will be able to conduct an accurate assessment and provide useful information to determine placement

options effectively, to develop educational programming and to determine useful methodological interventions.

It has been well established that social and cognitive deficits may be identified through children's engagement in various play behaviors (Farmer-Dougan & Kaszuba, 1999). Specifically, children who engage in less sophisticated forms of play appear to demonstrate lower cognitive and social skills which may be related to later academic and social problems (Connelly & Doyle, 1984). Children with developmental delays tend to have problematic social interactions and these social deficits or delays can frequently and easily be seen through the observation of their play. These children tend to have less sophisticated play and engage in reduced amounts of group play (Guralnick & Groom, 1985).

The use of naturalistic observations and the development of a standardized operationally based format for observing children's play may provide an improved opportunity to differentiate between children with autism spectrum disorder, children with mental retardation, and typically developing children. It may also improve ease of assessment and enhance diagnostic accuracy. Prior research in the area of play in children suggests that the ways children interact with each other can predict their social competencies, social skills development, and abilities to establish and maintain social relationships. However, most prior research has been carried out in contrived playgroups and under experimental or quasi-experimental conditions, but few studies have been carried out in naturalistic settings without adult interference.

The ability to observe children's play in a naturalistic setting, unimpeded by adult facilitation, by interaction, or by restrictive rules, should provide an uncontaminated

assessment of how children interact with one another. The development of social competence, social schemas, and patterns of social interaction is exhibited by all children on a daily basis. The use of school recess to make detailed observations of these social interactions provides the perfect opportunity to record and analyze these interactions. This would then provide an opportunity for researchers to assess how diverse groups of children express social competence and social interactions. In particular, it would allow researchers to observe and assess whether or not differences exist in social competence and social interaction between typical children, children with mental retardation, and children with autism spectrum disorder.

Although play has been considered an important, but not critical, aspect of assessing development in children, traditionally it has not been the focus of screening program or comprehensive assessment protocols. The traditional approach to screening and assessing children involves the administration of standardized instruments, such as norm-referenced and criterion-referenced tests. These tests are designed to measure affective, intellectual, and subject achievement domains (Meyers, McBride, & Peterson, 1996). In fact, it would be the very rare assessment that included a play-based or playground observation as part of the comprehensive assessment. Yet this is a vital, dynamic, and observation rich environment to capture both social and cognitive development and competencies. Further, as developmental domains are interrelated, what appears to be a deficit in one area may mask a deficit in another area (Linder, 1993). For example, a nonsocial child may exhibit noncompliant behavior during structured testing, or a child with motor deficits may be unable to perform the pencil and paper tasks, thereby distorting his or her true cognitive abilities or social competencies (Farmer-Dougan &

Kaszuba, 1999). Still other problems with a traditional assessment process have been identified. The use of parental reports are common in standardized assessment procedures, but the information obtained from such reports may be inaccurate or biased, based strictly on the parents' reading of the instrument and the perceived behavior of the child (Sattler, 1992). In addition, it is possible that traditional assessment may not capture the child's optimum performance, because the testing often occurs in an unnatural environment and with an unfamiliar examiner.

Several investigators have suggested that play assessment may provide a more reliable and valid description of behavior through which cognitive and social development may be assessed (Nutall, Romero, & Kalesnik, 1992; Linder, 1993). Play-based assessment can be a useful tool through which social and cognitive delays and disabilities may be diagnosed. Researchers such as Linder (1993) suggest that play-based assessment may provide more accurate information on the abilities of children because they are in familiar and less structured environments and are therefore more likely to demonstrate the full range of behaviors in their repertoire. However, because play-based assessments are used infrequently, there are few published investigations that compare play assessment with more traditional standardized assessment procedures. In addition, there are few, if any, examinations of effective ways to conduct play-based assessments. Thus little empirical support currently exists that provides evidence of internal reliability and concurrent validity of the play-based assessment approach (Farmer-Dougan & Kaszuba, 1999).

It has been said that play is a child's work. Childhood play provides the opportunity to practice the social skills that are critical to becoming a successful person within school and society. It is within play that children practice a variety of roles, learn to read the

intentions of others, learn to initiate and follow others' leads, and begin to experience acceptance from others (Nelson & Smith, 1995). If play is a child's work then the playground becomes his or her work setting. Elementary school children spend a relatively large proportion of the school day on the playground (Pelligrini, 1995). The playground thus becomes a useful research site because break (recess) time is one of the few occasions when children interact in a relatively safe environment; they are free of adult control and their play and social relationships are more their own (Smith, 1994). Smith (1994) further states that there is a large amount of space and there are a wide variety of activities and opportunities available to each child; these provide an excellent opportunity for the observation of social skills, social competence, and social interactions.

Chapter 2

Method

Participants

The sample was comprised of 81 public elementary school students in three groups: (1) 20 children without mental retardation who had two independent diagnoses of autism made by a community psychologist or psychiatrist and who were diagnosed with autism (using DSM-IV criteria) by the school psychologist, (2) 24 special education students with mental retardation who were not identified with autism, and (3) 37 typical students without identified psychological or educational problems. The children were consecutive referrals for a school evaluation; observation control children, who met the group criteria, had complete scores on the Playground Observation Checklist. Fifty-three of the children were male. The typical children were in grades second through fifth (with an approximate mean age of 9 years). Additional demographic data for the typical children were not available because they were observed anonymously. The children with autism ranged in age from 5 to 11 years ($M = 9$) and had IQs from 70 to 123 ($M = 88$). In 30% of the cases, one or both of their parents had a professional or managerial job. For children with mental retardation, ages ranged from 5 to 11 years ($M = 9$) and IQs from 34 to 68 ($M = 51$). One or both parents had a professional or managerial career in 17% of the cases. Tests administered to assess IQ were the Stanford-Binet-Fourth Edition, Wechsler Intelligence Scale for Children-3rd Edition, or Differential Abilities Scale. Demographic data are presented in Table 1.

Procedure and Measure

The playground observation checklist was developed in order to provide additional information during a comprehensive assessment process for children with autism spectrum disorder. During the development of the assessment process, numerous observations were conducted in structured classroom situations (e.g. math and history class). The usual outcome of these classroom observations yielded little or no information relative to the presence or absence of characteristics associated with autism spectrum disorder. Given the fact that core deficits in children with autism spectrum disorder involve qualitative impairments in reciprocal social interaction, both verbally and nonverbally, it was logical and necessary to develop an observation format conducted in settings that provide opportunities to observe reciprocal social interaction. It was determined the best environments in the school setting to observe unstructured social interaction are the playground, cafeteria, and physical education classes. Playgrounds, cafeterias, and physical education classes, therefore, were determined to be the best school environments in which to observe unstructured social interactions. Thus these environments were included in the development of the observation checklist; the playground emerged as the best possible environment to make the type of observations needed in a comprehensive assessment of autism spectrum disorder.

In order to develop the checklist, preliminary lists of items were generated to capture the wide variety of diverse social opportunities displayed by children on the playground.

It was determined that recess and the playground provided the greatest opportunity for children to display all possible interactions included in DSM-IV-TR criteria both for autism and for Asperger's disorder. A list of approximately 25 items was initially created. This list of potential items was based on multiple sessions observing both typical children and children with autism spectrum disorder on the playground. In addition, other checklists such as the Australian Scale of Asperger's Syndrome (Atwood, 1998) were reviewed to ensure items selected for the playground observation checklist were consistent with core deficits delineated in the DSM-IV-TR criteria. A thorough review of each item was conducted and items that were redundant or did not meet DSM-IV criteria were eliminated. This resulted in a final list of 10 items. The final step was to develop operational definitions of each of the remaining 10 items to ensure generalization across settings and observers. Numerous trials were then conducted with children assigned either to Autistic support classrooms or to general education classes in order to assess the ability of the checklist to capture diverse social opportunities and interactions on the playground. The current playground observation checklist is the outcome of this process.

The current study involved a retrospective analysis of existing educational data. The archived observations were conducted over a three-year time period as part of a second level evaluation process to assist in determining the most appropriate educational setting for children having difficulty in the school setting. The second level evaluations were conducted to assist educational teams in determining the need for a more restrictive educational placement and/or to provide intervention strategies for IEP development. The children with mental retardation were chosen as a comparison group in order to observe similarities and differences between the groups of children observed. The

students were observed for 15 minutes during recess, and their behavior was coded on the checklist. For comparative purposes, the behavior of a typical classmate identified by the teacher as not having special needs or academic problems was also observed and coded. The observation checklist (see Appendix) consists of 10 operationally defined behaviors (e.g., the child engages in social play with peers or the child engages in reciprocal social communication with peers). The checklist focuses primarily on whether or not the child initiates social interactions, exhibits social engagement with peers, displays functional play patterns, and exhibits awareness/adherence to rules of games. The behaviors were coded as present or absent by two members of the school district's multidisciplinary team; in this case the team included a school psychologist and speech and language pathologist who have extensive experience in assessment, instruction, and intervention techniques with students who have developmental disabilities. A scoring system was developed in which an observed item was given a score of one and an unobserved item was given a score of zero. Observations were unobtrusive so that the children were unaware that their behavior was being coded. One clinician observed the typical child and the other the target child on an alternating schedule. The two clinicians simultaneously observed and independently scored the behavior of five children with autism, five children with mental retardation, and five typical children to determine interobserver reliability. Interobserver agreement was 100% on the checklist.

Data Analyses

Analysis of variance with post hoc Bonferroni *t*-test and effect size (Cohen's *d*) statistics was used to determine the significance of differences in playground observation

total scores between children with autism, mental retardation, and typical development. Chi-square was calculated to investigate the degree to which the three groups differed on each observation checklist item.

Checklist data were analyzed to determine the cut-off points that were most accurate in identifying children in the three groups. The accuracy of these cut-off points in predicting group membership was determined by calculating positive predictive power or PPP (e.g., percentage of children with autism among children with a score in the autistic range), negative predictive power or NPP (percentage without autism among children whose scores were not in the autistic range), sensitivity (percentage of children correctly identified as having autism), and specificity (percentage correctly identified as not having autism). Independent *t*-tests, Cohen's *d*, Pearson correlation coefficients, explained variance (r^2), and chi-square was used to determine the relationship between playground observation scores and gender, parent occupation, age, IQ, and mental age (IQ/100 times age).

Chapter 3

Results

Observation Checklist Total Score

Children with autism, mental retardation, and typical development differed significantly from each other in observation checklist total scores ($F = 102.7, p < .0001$), and all Bonferroni paired comparisons were significant at the .0001 level. (Table 2) The mean checklist score for children with autism (2.4) differed by 5.2 standard deviations from the mean score for children with typical development (8.7), yielding a large effect size ($d = 5.2$). The mean score for children with autism differed by 2.0 standard deviations from the mean for children with mental retardation (6.0), also yielding a large effect size ($d = 2.0$). The difference between mean scores for the children with mental retardation versus typical development (1.6 standard deviations) was also large ($d = 1.6$).

The cut-off point yielding the highest accuracy in identifying children with and without autism was 5. Total checklist scores of 0 to 5 suggested autism, and scores of 6 to 10 suggested no autism. Using this cut-off point, 100% of the children with autism were correctly identified, and 85% of the children without autism were correctly identified. None of the typical children was misclassified, but 38% of the children with mental retardation scored in the autistic range. Negative predictive power (NPP) was 100%, meaning that none of the children who scored in the nonautistic range had autism (i.e., there were no false negatives). Positive predictive power (PPP) was 69%, indicating that 69% of the children who had a score in the autistic range actually had autism. The remaining 31% had mental retardation. These results are presented in Table 4.

Checklist Item Analysis

The percentage of children exhibiting each of the 10 checklist behaviors is reported in Table 3. One checklist item (“uses playground equipment functionally”) did not significantly differentiate the three groups ($\chi^2 = 0.3 - 4.2, p > .04$). Two checklist items (“follows rules of a game” and “responds to winning or losing”) were observed less frequently than all of the other items because the opportunity to exhibit these behaviors was not always available. Children with autism never exhibited the behaviors “follows the rules of a game” and “responds to winning or losing”. Children with mental retardation and typical development sometimes did exhibit these two behaviors, and the frequencies were significantly higher than for children with autism ($\chi^2 = 6.1 - 20.2, p \leq .01$). The differences in frequencies between children with mental retardation and typical development were nonsignificant ($\chi^2 = 0.4 - 0.5, p > .48$).

Three of the checklist items were developmental in nature and involved language and motor skills (“initiates communication with other children,” “engages in a reciprocal social conversation,” and “does not exhibit gross motor incoordination”). Frequencies for these three items did not differ significantly between children with autism and mental retardation ($\chi^2 = 0.0 - 3.0, p > .08$). However, children with typical development were significantly more likely to exhibit these behaviors than children in the other two groups ($\chi^2 = 20.0 - 52.7, p < .0001$).

The items that differed between children with and without autism were the remaining four social items (“engages in social play with peers,” “is not socially isolated from peers,” “respects boundaries and personal space,” and “does not exhibit socially

inappropriate behavior”). Children with autism exhibited these behaviors at a significantly lower frequency than children with typical development ($\chi^2 = 14.1 - 44.6, p < .0001$) and children with mental retardation ($\chi^2 = 6.5 - 20.6, p < .01$). Children with typical development and children with mental retardation were similar in these behaviors ($\chi^2 = 0.0 - 4.2, p > .04$).

All of the children with typical development exhibited each of the four social behaviors, as did 79% of the children with mental retardation. In contrast, none of the children with autism exhibited all four social behaviors. The total score for the four social items was better at differentiating between children with and without autism than the total score for the entire checklist. All children with typical development had a perfect score of 4, on the social items as did the majority of children with mental retardation. Only children with autism had scores of 0 or 1. Using the total score for the four social items only, the most accurate cut-off point was 3, with scores of 0 to 3 suggesting autism and a score of 4 suggesting no autism. Using this cut-off point (Table 4), overall accuracy was 94%, sensitivity was 100% (all children with autism were correctly identified), specificity was 92% (92% were correctly identified as not having autism), NPP was 100% (all children with a score of 4 did not have autism), and PPP was 80% (80% of the children with a score less than 4 had autism).

The single best item distinguishing children with autism from typical children was “sustains a conversation,” which identified the children with autism versus typical development with 100% accuracy. The single best item distinguishing between children with autism and mental retardation was “initiates social play with peers,” which identified children in these two groups with 86% accuracy.

Age, Parent Occupation, Gender, and IQ

As shown in Table 5, age was not significantly related to playground observation scores in any of the groups. The correlation between age in months and observation scores was low in children with autism ($r = -.32, p = .16$) and in children with mental retardation ($r = .08, p = .72$) and the correlation explained little of the variance (10% and 1%). Similarly, observation scores did not differ significantly by grade in the children with typical development ($F = 0.1, p = .94$). Parent occupation (professional or managerial position vs. other) was also not significantly related to observation scores in children with autism ($t = 0.5, p = .61$) and mental retardation ($t = 0.0, p = 1.0$), as shown in Table 6.

IQ and mental age were not significantly correlated with observation scores in children with autism ($r = .16$ and $-.13, r^2 = .03$ and $.02, p \geq .51$), but they were in children with mental retardation ($r = .69$ and $.53, p \leq .007$), explaining 48% and 28% of the variance. The higher the IQ and mental age, the better was the observation score in this group. Finally, scores for males and females did not differ significantly in children with mental retardation ($t = 0.5, p = .60$), but males had better scores ($M = 9.4$) than females ($M = 7.9$) in the typical group ($t = 5.0, d = 1.6, p < .0001$). This occurred because boys were significantly more likely than girls ($x = 12.4, p = .0004$) to engage in games that involved rules and winning and losing, which were two of the checklist items. Only one child in the autistic group was a female, and her observation score of 2 was similar to the mean of 2.4 for males.

Hypotheses

Hypothesis I: It is predicted there will be a difference in playground observation scores between children with typical development, children with mental retardation, and children with autism spectrum disorder during a structured 15 minute playground observation.

Hypothesis II: It is predicted that typically developing children and children with mental retardation will exhibit similarities in social competence during playground interactions but children with autism spectrum disorder will exhibit significant differences in playground interactions from typically developing children and children with mental retardation.

Hypothesis III: It is predicted that age, gender, IQ, and parent occupation will influence performance on the Playground Observation Checklist.

Chapter 4

Discussion

Research strongly suggests (Schreibman, Koegel, & Koegel, 1996; Gutstein & Whitney, 2002; Rutter, 1978; Strain, 1991) that children with autism spectrum disorder are significantly impaired in their ability to initiate and sustain social interactions in all settings. It would be expected that unstructured, loosely regulated settings such as the playground would present a challenge to children with autism spectrum disorder because social competence is continuously required in that setting. However, it also provides a rich and dynamic opportunity to study the way that children initiate social contacts, regulate those contacts, and build sustained relationships around their play interactions. Research also suggests that social competence and autism spectrum disorder are intertwined in complex ways and that the implications for children with autism spectrum disorder extend far beyond their playground activities (Strain, 1991). In fact, social competence permeates every aspect of their lives. In order to understand the importance of social competence in children with autism spectrum disorder, it was important to observe their behavior and interactions in a context that offered many opportunities for social interaction, combined with the opportunity to interact without adult influence or regulation. Unstructured playground observations were analyzed because these afforded the opportunity to observe the social world of elementary, typically developing children, children with mental retardation, and children with autism spectrum disorder.

The purpose of this study was to determine if similarities and differences exist between typically developing children, children with mental retardation, and children

with autism spectrum disorder. An operationally defined structured playground observation checklist was analyzed to provide a consistent framework for conducting observations and to test the clinical and statistical utility of the playground observation checklist. If the playground observation checklist proved to be accurate, it would potentially provide an additional instrument for use by clinicians when conducting comprehensive assessments of children suspected of having autism spectrum disorder.

The results of this study revealed that similarities and differences clearly exist between children with autism spectrum disorder, children with mental retardation, and typically developing children. It also confirmed the fact that the playground observation checklist provided both sensitivity and specificity in identifying and differentiating between and among the three groups studied. It was most interesting to determine that children with mental retardation and typically developing children were very similar in their social interactions and play interactions, but children with autism spectrum disorder significantly differed in their play and social interactions during the 15-minute playground observation. Children with autism spectrum disorder were easily distinguished from children with mental retardation and from typically developing children by their lack of social engagement and their lack of social initiation. However, children with mental retardation and typically developing children did not differ significantly from each other in these critical behaviors. This would indicate the fact that the pervasive social problems and the lack of social competence displayed by children with autism spectrum disorder does not reflect a mere developmental delay in acquiring social skills, but reflects a qualitative difference that exists regardless of mental age or cognitive ability. The results indicate that both children with autism spectrum disorder

and children with mental retardation performed poorly on the developmentally based items (“initiates communication with peers,” “sustains a conversation,” and “does not exhibit gross motor incoordination”), which reflects their impaired language development and motor development. This finding would be consistent with expectations because children with autism spectrum disorder and children with mental retardation have language and motor deficits consistent with their developmental disabilities; typically developing children, however, generally do not exhibit life-long delays in these areas.

The results of the study indicate mental ability and levels of cognitive development were not significantly related to the playground observation checklist scores in children with autism spectrum disorder, but were clearly related in children with mental retardation. This supports the position that autism spectrum disorder, unlike mental retardation, does not reflect merely a developmental delay, but supports the fact that autism spectrum disorder is a specific disorder that reflects chronic *qualitative* difference in their behavioral interactions and their social exchanges. The results of this study support the atypical quality of social interaction and social communication and points out the need to study the absence or presence of these atypical patterns as part of a comprehensive assessment protocol for diagnosing children with autism spectrum disorder.

A number of variables including age, parent occupation, and gender were statistically analyzed as part of this study. Results of the analyses indicated none of these factors was related to overall scores on the playground observation checklist, with one exception. In typically developing children, males had higher scores than females. Typical male children were more likely to engage in competitive games during recess, such as football,

basketball, soccer, and foursquare, all of which involved following specific rules and delineating a winner or loser at the end of the game. In contrast, typical females were more likely to move around the playground in pairs or small groups talking and observing others. When typical females engaged in structured activities, it generally involved loosely structured activities, such as practicing cheerleading routines, in which specific rules were not present and winning or losing was not a factor.

The playground observation checklist involves 10 operationally defined criteria (see Appendix) used to conduct a systematic assessment of children' interactions during recess. The results of the study indicated that four social behavior items were most powerful in distinguishing between children with autism spectrum disorder, children with mental retardation, and typically developing children. These items include: 1) "engages in social play with peers", 2) "is not socially isolated from peers", 3) "respects boundaries and personal space", and 4) "does not exhibit socially inappropriate behavior". By using these four items alone, it was possible to differentiate between typical children and children with autism spectrum disorder 100% of the time and to differentiate between children with autism spectrum disorder and children with mental retardation 79% of the time. It is highly significant that none of the children with autism spectrum disorder exhibited all four social behaviors, whereas 100% of the typical children and 79% of the children with mental retardation did. In fact, the total score on these four social items for all three groups was better at differentiating between children with and without autism spectrum disorder than the total score on all 10-playground observation items. This obviously makes these four social items very powerful in diagnosing children with autism spectrum disorder. The clinical significance and the clinical utility of this finding cannot

be overstated. When conducting a comprehensive assessment of children suspected of having autism spectrum disorder, it is imperative to move beyond the traditional assessment room within the school and extend the assessment to the playground where these four social behaviors can be easily observed. Clinical practitioners sometimes use structured standardized observation instruments (e.g. ADOS-WPS), structured informal observations (e.g. in the classroom or test room) and structured checklists (e.g. CARS, GARS) when assessing autism spectrum disorder. This study strongly suggests that the addition of a playground observation and the use of a structured, operationally defined playground observation checklist would be a meaningful component of a comprehensive assessment protocol.

As would be predicted based on previous research, the playground provided a highly social, interactive context to observe elementary-aged children at play (Hartle & Johnson, 1993). Thus, playground observations and the use of a structured playground observation checklist should be part of a comprehensive assessment of autism spectrum disorder.

Conclusions

In conclusion, this research study strongly suggests that a structured, operationally defined playground observation format is potentially useful in the assessment and diagnosis of autism spectrum disorder. The ability to classify a child with autism spectrum disorder accurately, using the four social items on this checklist was extremely high and correctly identified 94% of the children observed as “having” or “not having”

autism spectrum disorder. All of the children with autism spectrum disorder and all of the typically developing children were correctly identified. The accuracy for correctly identifying children with mental retardation was 79%, because some of the children observed had social scores in the range associated with autism spectrum disorder. This result should raise a red flag to clinicians when assessing children with mental retardation. It appears that additional observations and assessments should be completed before adding a co-morbid diagnosis of autism spectrum disorder to this group.

Children referred for an evaluation of autism spectrum disorder are generally observed in a classroom setting (which is well structured and adult supervised) or in a clinic setting where one-to-one interaction with an adult generally occurs. Children with autism spectrum disorder, particularly those with high functioning autism or a diagnosis of Asperger's disorder, often react and interact quite well with adults but interact poorly with their peers. This study supports the clinical utility of a playground observation as part of a comprehensive assessment package. A playground observation offers an opportunity to observe children in social situations during free play with peers when there is minimal adult supervision, fewer constraints and fewer confounding variables than a classroom or clinical setting alone. The use of a playground observation as part of a comprehensive assessment package is likely to increase the diagnostic acumen and accuracy when making a diagnosis of autism spectrum disorder. These findings both suggest and support the use of the structured playground observation checklist as a simple and clinically useful component of a comprehensive evaluation of possible autism spectrum disorder.

Given the need of all children with autism spectrum disorder to enhance and improve their social competence continually, the information obtained from a structured playground observation could also be used to develop intervention programs based on the specific individual needs of each child. By conducting an item analysis of the child's observed behaviors on the playground, the educational staff could develop a classroom intervention designed to remediate observed deficits. Observations could be conducted at the end of the intervention program to monitor the ongoing progress of the child in areas of difficulty. In addition, the playground observation checklist could also provide pre/post observation data to assess response to intervention.

In summary, this study has shown that the inclusion of a structured playground observation as part of a comprehensive assessment protocol increases the ability of the clinician to diagnose autism spectrum disorder correctly and to differentiate between autism spectrum disorder and other developmental disabilities. The study emphasizes the importance, for professionals conducting diagnostic assessments of autism spectrum disorder, to think beyond the structured confines and predictability of the assessment room and to move into the natural context of the school playground.

This study has also added to the literature by delineating the importance of social competence in the diagnosis of autism spectrum disorder. It also suggests and supports the clinical and statistical utility of assessing children in an unstructured natural setting such as the playground. However, further research should include additional study and validation of the playground observation checklist in order to establish construct validity. The instrument should be used by a larger number of professionals when conducting diagnostic assessments of children suspected of having autism spectrum disorder. This

will encourage school psychologists and other professionals to think “outside the box” when conducting these assessments. In addition, it will establish the importance of social competence in the life of children with autism spectrum disorder and hopefully lead to more accurate diagnosis and better intervention strategies and programs to treat this important aspect of the disorder.

Limitations

The major limitation of this study is that the observers were not blind to the child’s diagnosis, raising the possibility of bias in coding. The structured playground observation checklist may have utilization in the future as a measure of social competence and in the diagnosis of autism. However, in its present form it lacks the statistical support and rigorous scientific examination required to be a “stand alone” instrument. Now that the instrument has shown promise in this study, further studies will need to be conducted to validate the instrument.

In light of the exploratory, retrospective nature of the study, there are numerous limitations present. A larger sample size could increase statistical power and increase generalizability. A validation study of the structured playground observation checklist should be conducted to determine internal reliability of items and to assess construct validity of the instrument.

Interrater reliability and test-retest reliability studies using raters who have no previous knowledge of the instrument or its purpose should be conducted. This would

address the issue of examiner expectancy and increase the generalizability of the instrument and results of the study.

The use of playground observations as a diagnostic tool and an intervention tool has excellent possibilities. There is no other setting where the presence or absence of social skills and social competence is so apparent and so vital. Future research should extend this line of inquiry and attempt to develop standardized, validated instruments for use by front line clinicians.

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Playground Observation Checklist

The Child:

- _____ 1. Engages in social play with peers
 - the child actively seeks out other children and becomes involved in play with one or more child
- _____ 2. Uses playground equipment functionally
 - the child will use equipment on the playground for the intended purpose e.g. swing on a swing, climb up the ladder and slide down the slide as specified in the playground rules
- _____ 3. Shows awareness and adherence to rule of a game
 - the child participates in a structured game or activity and follows the rules of the game e.g. turn taking, understanding boundaries, scoring etc.
- _____ 4. Shows a response to winning or losing
 - the child will show an awareness of winning or losing e.g. anger, congratulations, high fives or team spirit
- _____ 5. Initiates communication with other children
 - the child will walk up to another child on the playground and spontaneously speak to, show something or request something from another child
- _____ 6. Does not exhibit social isolation from other children
 - the child does not remove himself or herself from other children and engages in solitary play e.g. perseverative play
- _____ 7. Engages in reciprocal social conversation
 - the child initiates a conversation with his or her peers and sustains a reciprocal conversation (i.e. child-initiates-peer response-child initiates-peer response)
- _____ 8. Respects boundaries and personal space
 - the child does not intrude on other play activities e.g., walking through structured games, invading personal space, inappropriate touching
- _____ 9. Does not exhibit gross motor incoordination
 - have difficulty with gait, motor awkwardness, or poor motor skills (climbing, throwing, catching) in comparison to other children his or her age
- _____ 10. Does not exhibit socially inappropriate behavior such as picking nose or skin, fondling genitals, or other behavior that may be socially inappropriate.

Table 1.

Demographic Data for Children with Autism ($n = 20$), Mental Retardation ($n = 24$), and Typical Development ($n = 37$)

	Autism	Mental Retardation	Typical
Mean Scores			
Age (years)	9.0	9.0	9.0
IQ	88	51	NA
Percent			
Male	95	58	54
Female	5	42	46
Percent			
Professional	30	17	N/A
Nonprofessional	70	83	N/A

Table 2.

Mean Playground Observation Total Scores for Children with Autism (n = 20), Mental Retardation (n = 24), and Typical Development (n = 37)

Mean Score	
Autism	2.4
Mental retardation	6.0
Typical	8.7

Note. $F = 102.7, p < .0001$.

Table 3

Percentage of Children Exhibiting Each Checklist Behavior (N = 81)

Checklist behavior	Autism	Typical	Mental Retardation
Engages in social play with peers	10	100	83
Uses playground equipment functionally	50	68	38
Follows rules of a game	0	59	71
Responds to winning or losing	0	46	33
Initiates communication with peers	20	100	50
Is not socially isolated from peers	20	100	88
Sustains a conversation with a peer	0	100	12
Respects boundaries and personal space	50	100	96
Does not exhibit gross motor coordination	35	100	33
Does not exhibit socially inappropriate behavior	60	100	96

Table 4.

Accuracy of Playground Observation Scores in Classifying Children With and Without Autism

	Total score	Social items
Sensitivity	100%	100%
Specificity	85%	92%
Positive predictive power	69%	80%
Negative predictive power	100%	100%

Table 5

Playground Observation Total Score Correlations

	Autism			Mental retardation		
	<i>r</i>	<i>p</i>	<i>r</i> ²	<i>r</i>	<i>p</i>	<i>r</i> ²
Age	-.32	.16	10%	.08	.72	1%
IQ	.16	.51	3%	.69	<.0001	48%
Mental age	-.13	.60	2%	.53	.007	28%

Table 6.

Significance of Differences in Playground Observation Scores Between Professional Versus Nonprofessional Families and Between Boys Versus Girls

	Autism		Mental Retardation		Typical	
	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>	<i>t</i>	<i>p</i>
Occupation	0.5	.61	0.0	1.00	NA	
Gender	NA		0.5	.60	5.0	<.0001